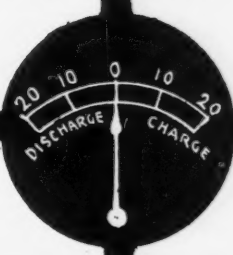


**No Spark**



**Ammeter Shows 5 Amperes  
Steady Discharge**



**No Ammeter Reading**



**Normal Ammeter**

1 or 2 Amperes w  
needle unsteady

**Shows Primary Circuit  
Is Not Being Interrupted**

**Shows Primary  
Circuit Open**

**Shows Primary Circu**

**Locate Open  
With**

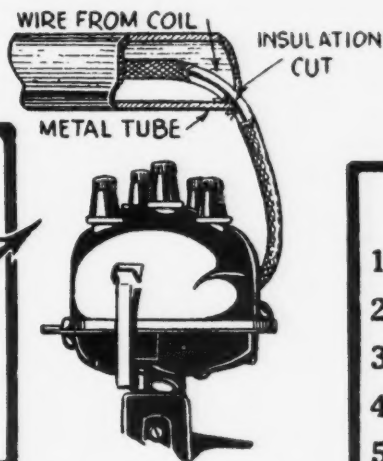
**Wire test  
Lamp test  
or  
Voltmeter**

**Cause of Trou**

**High tension wire from  
distributor either off or g**

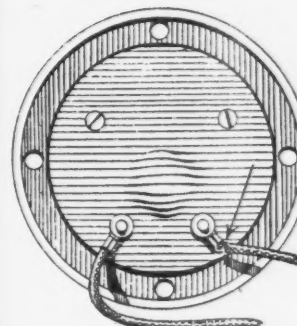
**Trouble Due to**

1. Points not opening
2. Insulated contact grounded.
3. Ground in low tension wire from coil to interrupter.

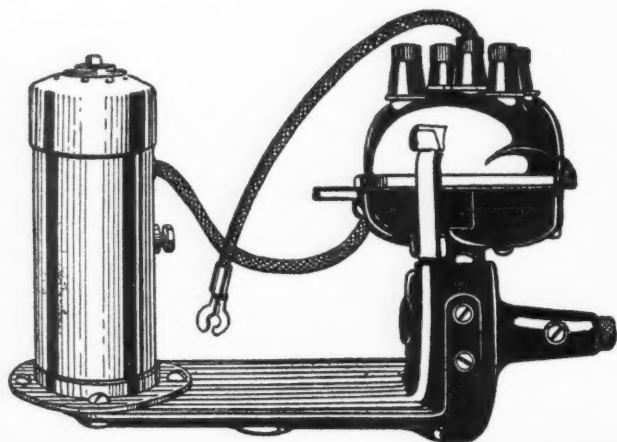


**Open Circuit In**

1. Wiring
2. Switch
3. Ammeter
4. Ballast
5. Interrupter contacts not touching or surfaces burnt.

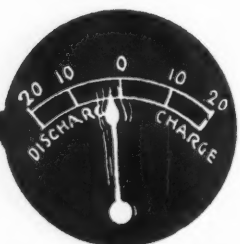


1. Coil shorted
2. Condenser s  
condenser is
3. Coil connect  
across conta
4. Distributor  
(burnt)



# Engine Will Not

Remove Spark Plug W  
Near Engine While



Normal Ammeter Reading

1 or 2 Amperes with  
needle unsteady

Shows Primary Circuit O. K.

Cause of Trouble

High tension wire from coil to  
distributor either off or grounded

1. Coil shorted—try a new one.
2. Condenser shorted—try new one or if condenser is in coil try new coil.
3. Coil connected wrong—condenser not across contacts.
4. Distributor arm punctured (burnt)

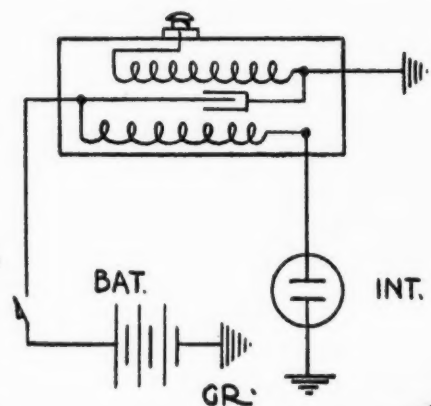
Weak Spark, Jumps 1-32"  
or 1-16"

Shows Primary Circuit O. K.

Cause of Trouble

Insulation on high tension wires  
cracked (listen for sparks jumping  
through)

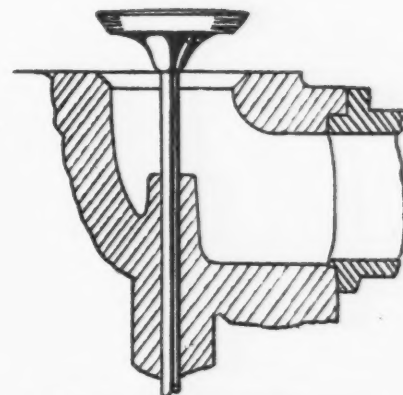
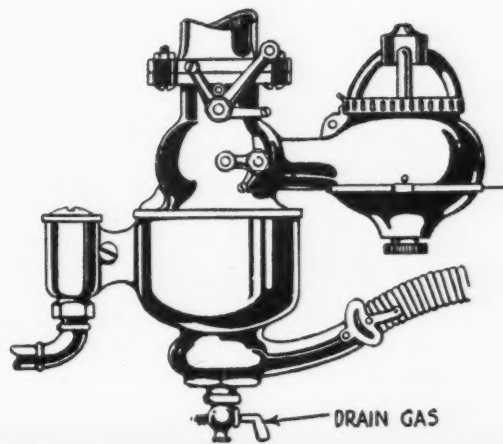
12 volt coil being used on 6 volt  
system





**Engine Will Not Run**

**Disconnect Ignition Wire and Hold While Cranking**



VALVE STUCK OPEN

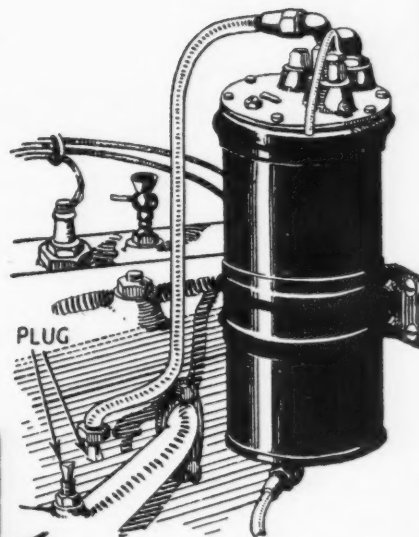
**Spark O. K. Just**

**If Tank Contains Gasoline**

Prime all cylinders with fresh fuel from line pump. (In cars which have been some time, the volatile portion of gasoline have evaporated, so that vaporization will take place in carburetor.)

**Engine Runs When Primed**

**Shows Trouble in Fuel System**



**Engine Does Not Run or Fires Irregularly**

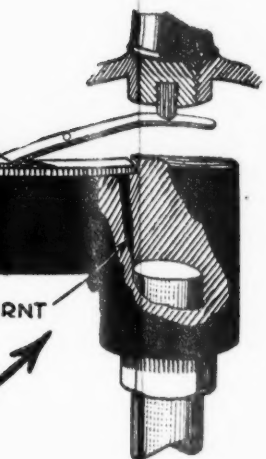
**Mechanical Trouble**

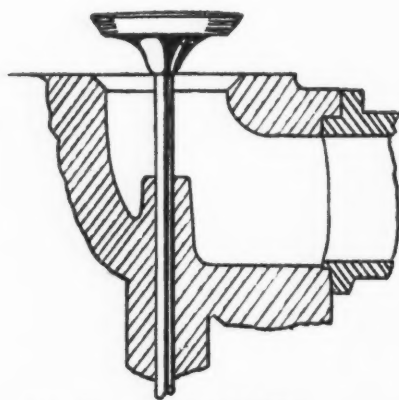
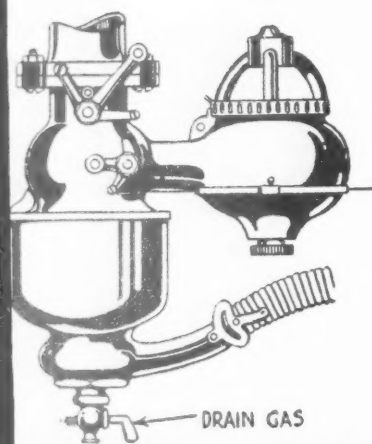
**Test Compression of Each Cylinder by Cranking by Hand**

**Look For**

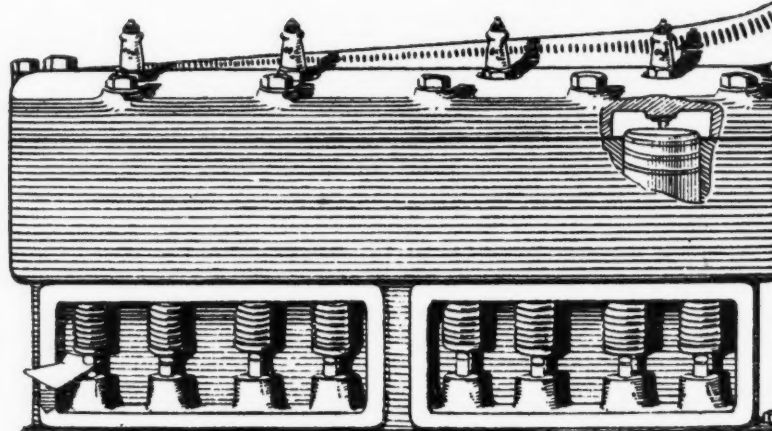
1. Valves stuck open.
2. Camshaft broken or gear loose on shaft (would show in checking timing).
3. Muffler clogged (Try operation with exhaust pipe off).

1. See if gas can be drained from carburetor.
2. See if gas line is clogged.
3. Check for vacuum tank trouble by disconnecting and plugging intake connection and using as a straight gravity tank.
4. Water in gasoline. Drain carburetor and sediment chamber under tank.
5. Check for cracked intake manifold or bad air leak.
6. Try new gasoline in tank, if car has been unused for some time.





VALVE STUCK OPEN

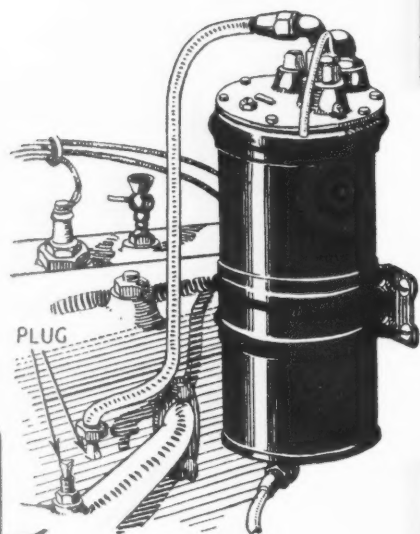


CHECKING EXHAUST VALVE WITH PISTON

## Spark O. K. Jumps $\frac{3}{16}$ "

### If Tank Contains Gasoline

Prime all cylinders with fresh fuel from the gasoline pump. (In cars which have been unused for some time, the volatile portion of the fuel may have evaporated, so that vaporization does not take place in carburetor.)



Primed

Fuel

from carbu-

ouble by dis-  
take connec-  
ight gravity

a carbureter  
er tank.

manifold or

if car has

Engine Does Not Run When Primed  
or Fires Irregularly

Mechanical Trouble

or

Timing Trouble

Test Compression of Each Cylinder  
by Cranking by Hand

### Look For

1. Valves stuck open.
2. Camshaft broken or gear loose on shaft (would show in checking timing).
3. Muffler clogged (Try operation with exhaust pipe off).

1. Check spark to occur at top of compression stroke for each cylinder.
2. Check exhaust valve of last cylinder to close with No. 1 piston on firing dead center.
3. Excessive use of choker may have flooded cylinders (Crank engine with pet cocks open and throttle open).
4. Water leak in cylinders.



n stroke

se with

ylinders.  
throttle

s Journal Co.





## The Well-Manned Shop Gives Satisfaction

# When to Put on a Night Shift

In the Busy Season a Well-Organized Shop May Be Able to Greatly Increase Its Output Without Materially Adding to Its Overhead by Continuous Operation

By J. EDWARD SCHIPPER

**N**O factory would think of turning down business that could be handled with the addition of a night shift. Every good manufacturer knows that the 16 or 24 hour-per-day plant pays bigger dividends than the 9 hour-per-day factory. Yet there are hundreds of repair plants through the country that could be gathering added profits by taking a leaf from the book of the manufacturer and putting on a night shift.

Every maintenance shop that has to turn away business because it is filled to capacity during the day becomes a potential 18 or 24 hour-per-day plant. Not only will it cease to be necessary to turn away jobs that are not taken because they cannot be handled during the day, but the amount of new business that would be attracted to the shop would probably surprise the garage man who has not given the subject considerable study.

From the standpoint of profits on this sort of business there is no reason why they should not be as good as on the day's business. In fact, the overhead spread over more productive hours the burden on the individual job becomes less and the profits on the day business is correspondingly increased. In other words, if it has been found necessary to charge 150 per cent to overhead on handling repair jobs with a shop that only works during the daylight hours, it may be readily possible to reduce this to 100 per cent for a shop that works both day and night.

The fixed expense of rent, insurance, investment in plant and equipment are not affected by the addition of the night force. The administrative costs of the night force are not as high as for the day force because the bookkeeping can be handled by the day bookkeeper. A good reliable night foreman with one clerk can handle the business of a large shop at night and keep everything in good enough form so that the day bookkeeper can pick up the work without delay in the morning.

With the reduced operating expense the proprietor of the business will be able to pay the night foreman sufficient to attract the best possible man for the work. In fact, by making a partner of the night foreman, by putting him on a

profit-sharing basis, a fine incentive is provided.

There are a great many conditions which make a night shift advisable. A shop which has built up a large steady business of straight repair work for private owners' cars, and which finds that business so large that it is faced with the choice of moving into larger quarters or putting on night shifts, can generally save itself considerable money and add to its profits by postponing the moving into larger quarters until it is

shop with the night shift. There is a surprising amount of this business. In fact there are thousands of automobiles being driven which are in need of minor repairs that are neglected because the owner cannot afford to deprive himself of the use of the car.

It would not take very much salesmanship on the part of the garage to get a good share of this business into the shop. A letter addressed to the regular customers of the shop calling attention to the night facilities would more than likely fill the shop with work, immediately. Minor repairs and adjustments, with perhaps a wash and the car delivered at the owner's door in the morning, would be a service that would tempt many dollars into the pocket of the garageman.

Another condition which would bring work in for the night shift is a garage located at a natural touring center. There are a great many of these through the country. The towns along the transcontinental highways, or focal points such as for example Albany, N. Y., where the routes from the Adirondacks, New England, the Mohawk and Hudson River valleys converge, make ideal places for a garage specializing on night conditioning work. Highway signs, local advertising and perhaps arrangements with the leading hotels for a neat sign on the writing desk or door of the rooms would help bring in this business, and there is a great quantity of it.

Still another fertile source of business is the delivery service or any business fleet of a commercial organization that does not maintain its own garage. A contract to keep these cars in condition would keep the shop busy. This sort of work is not hard to secure and can be made profitable to both the garage and the concern for whom the work is being done.

One of the biggest mistakes a repair business can make it to move into quarters that are too large when it is not necessary to expand at all. Many manufacturers during a boom era will make the same mistake. There are times when business seems to run away with itself and goes beyond all bounds of expectancy. That is the time for the proprietor of the business to acquire a re-

### PERSONNEL

**E**VERY automotive maintenance establishment which has passed the stage of a one-man shop is confronted with the problem of hiring and keeping sufficient and competent employees. Important phases of this problem are dealt with on this and following pages. These articles are:

*When to Put on a Night Shift*  
—By J. Edward Schipper.

*To Get the Men and Keep Them*—By A. H. Packer.

A careful reading of these articles will give you some ideas that you may be able to apply with benefit to your own business.

"The Well Manned Shop Gives Satisfaction."

not able to handle the business with both day and night shifts.

Dealing with a case of this kind it must be remembered that the night shift alone will attract business that would never enter the shop if the night shift were not available. If the shop has a reputation for good work, but is so busy that it cannot take care of all the business that would come its way ordinarily, there are going to be many owners who will take their cars to a shop which is perhaps inferior. This business might just as well be taken care of by the good shop, with its night shift.

The owner who hears that he can drive his car into an establishment, and have it back next morning for the business day is going to be glad to patronize the



serve. If all the money is thrown back into the business, the plant and the equipment might prove to be a profit eater when the business gets back to normal. By making the night shift absorb the overload the added business can be turned into profits that remain in the bank.

All of this does not signify that any garage can put on a night shift and make it pay. There are no doubt more times not to put on a night shift than there are times to put one on. Nevertheless there is not a garage in the maintenance business that should not post itself thoroughly on the advisability of putting on such a shift.

Every garage that has a repair department that finds itself packed every night with cars in for storage can probably have night repairmen on the job with good results. When a customer brings in a car for transient storage, a large percentage of them have some little job that they would like to have done provided that it would not tie up the car. The "Ask 'em to buy" method that has proved so successful in the sale of accessories and equipment can be used here to good effect.

The garageman who says "Mr. Blank, while your car is in here for the night can we not touch up your breaker points, clean your spark plugs, take up your spring clips, shackle bolts and sheet metal fastenings, so that your car will be safer and free from rattles when you take it out tomorrow?", is going to get quite a little business. He is going to get the business of a large percentage of the transients on tour or business trip. In addition to this kind of work, he can get valve grinding or similar jobs and the in case of cars which come in with repairs evidently in need, he is going to get this business also. If he has advertised along the highway, he is not only going to get what he asks for on the floor but is also going to get the work of the business or pleasure driver who is coming through his town and is attracted by the possibility of getting the work done during the night with his car ready the next morning. "We Work While You Sleep!" would be a good slogan to display with the advertising.

One of the big advantages to the shop that has the night shift which enables it to get business that would perhaps slip into other hands is the ability to

turn our work quicker for the man who really wants his car in a hurry (and they all do) and still has a big job to do. With proper organization and real flat rate systems in use, the day shift would be able to turn a big job over to the night shift to go on with the work, so that the car need be in the shop for only half the time with even a big overhaul job.

If a shop can turn out a big job in half or perhaps a little more than half the time that the other shops in the town can do it, by virtue of well-trained night shift in charge of a competent foreman it is only reasonable to expect that a larger percentage of this sort of work will fall into the hands of the shop with the night shift. This requires that the team work between the two shifts be perfect. In fact it may be necessary to have one or two men who act as sort of intermediate shift men, coming on perhaps at the middle of the day shift and working until the middle of the night shift if only for the purpose of tying together long and important rush jobs. There will not be so many of these in the shop that they will tie up the organization to any great extent.

It is not an easy task to put on a night shift and have it dovetail neatly into the day shift at once. This takes experience and a definite policy on repair methods. The idea fits very well into shops that have standard methods as would be the case in a service station working on the flat rate basis. Large repair shops handling one make of car that are losing a large amount of business to outside garages because they cannot handle all the work themselves in the day time would be the most logical type to put the night shift arrangement into immediate operation.

It has been the writers own personal experience in touring the country that the service stations in all the large centers, which handle the popular make of cars all have so much business that they cannot handle it in the working day with the floor space they have available. The writer recently went to the service station in Chicago, of the company handling the car he drives, and was informed that it would be impossible for them to touch a certain piece of work for two days.

Very seldom will a customer wait this long before having the service station

handle the work. He will take the car somewhere else and not only does the service station lose that particular piece of business, but the owner takes away with him the feeling that he is not getting the sort of service he has a right to expect and it may militate against his purchase of a similar car when the time comes for him to make the change to another vehicle.

The reaction that the customer carries away with him from the service station is recognized as one of the most important factors in determining whether or not the customer will buy the same make of car the next time he is in the market. There are more sales killed by poor service than by poor performance of the car. The car that performs poorly is a rarity these days. Companies making bad cars have gone out of business; the next to go out of business will be those giving poor service. It is a factor that is vitally worth considering, and if the night shift will result in better handling of the customers, giving them better service at the same money and with less delay, it will have paid for itself in good will without even considering the profits which accrue from the greater volume of business.

Nothing has been said of the night emergency work. There is always a certain amount of this. There is not enough for the average shop to keep a night shift waiting, but there is enough in all large centers for a shop that has a night shift at work to pick up quite a few odd jobs, many of them large in size. It is easy to keep the emergency wagon ready and one of the mechanics on the night shift can be the emergency man in case a call comes in. Some of the wrecking work which has to be done turns out to be the most profitable and the largest jobs in the shop.

A garage or service station which gets the name around its particular locality of being able to handle these emergency, breakdown or wreck jobs, quickly and expeditiously, soon opens up for itself a profitable line of business. This service can be advertised at the same time and on the same posters and notices which tell of the regular night service work. Get to be known in your vicinity as a night and day shop, which does good work at reasonable prices, and you will become the outstanding service station in the vicinity.

(Continued from page 51)

states, will be performed on the car for a certain amount, depending upon whether or not bulbs have to be put in, fresh oil into the crankcase, etc. The flat charge for the labor might be \$1.25 and any lubricant, bulbs, fuses, etc., needed will be added to this.

By far the best practice of charging for operations such as listed in Group 2 is by use of the flat rate system. None of these jobs should be performed free of charge, unless of course the customer's

car comes in during the 90-day guarantee period, or there is justification for the shop doing the work free of charge, as might be the case with an old customer. Most of this will have to be gaged by the dealer or the man in charge of service. Each individual often has to be handled differently from the next man who comes in. But in the main, it is safe to place a flat charge on the operations listed in Group 2.

What has been said of Group 2 applies to Group 3. Many dealers are using a

flat charge for this work now that the heavy tourist trade of the summer months brings in a great amount of it. The time to approach a tourist is when he brings in his car to leave it for the night, or when he comes in for a minor repair or adjustment. The same psychology holds here as when you go into a men's furnishing store and buy a pair of garters for 50 cents. The clerk, if he is on to his job, will at least suggest a tie, shirt or pajamas and perhaps you will buy just as the tourist is apt to buy Group 2 or 3.



# To Get the Men and Keep Them

*Courteous, Efficient, Dependable Workmen Build Up the Shop's Reputation  
—Suggestions on Training and Methods by Which They May Increase  
Their Usefulness and Add to Their Earnings by Bringing in Business*

By A. H. PACKER

**B**EATING into the teeth of the gale. Mighty rollers breaking in a smother of foam on the plunging prow. A sailing ship of the olden time working through the rockbound neck of the harbor into the open sea. Rocks and weather plotting against men and ship.

## But such men.

Each at his task, ready to heave on a straining sheet, to gain another point to windward. Helmsman alert to each puffy squall, yielding to the onslaught of the gust, then falling off on the course again. Each man knowing his work, strong in muscle and knowledge, and the ship and men are victors.

A ship less staunch might not stand the strain, but strength of rib and sturdiness of plank would avail nothing without a worthy crew.

## So it is with the shop.

Right equipment for each job. The right things for the men to work with, to give satisfaction, to turn out work that spells profits. But without right men to meet the customers, right men for each job, and promises that are kept, there is danger of going on the rocks.

## Getting Men or Making Them

No question but what it is a real problem to get the right man for each job. In the dull months enough men of the right kind can usually be found, but in the rush season this is not the case, and the wise shop manager is one who in the dull seasons has planned ahead, possibly breaking in a boy or two on routine work such as relining brakes, so that when the rush comes he will have a

piece work man who can turn out the work.

In training men for the shop the first essential is a foreman who knows his work and who can train his men as to the best way various jobs should be done. This is a place at which the shop manager should watch his steps, for the foreman may be of the self-trained variety, as many are, and may have ways of doing various jobs which are not in accord with latest factory practice.

In the establishment of flat rate schedules in which a certain job is to be done within a certain time limit, it has often been found that a certain procedure is necessary to do the job within the time set. If the foreman has always done it another way he may feel his way is best, and throw out the method recommended by the factory. Then when the time on the job is found to be too much, the foreman may say, "Oh, that flat rate is the bunk, anyway." Then if the flat rate prices are adhered to, the shop will lose money, while if the price is increased the car owner may take his car elsewhere the next time it needs attention.

However, the foreman is still the best trainer the helper can have, especially if he has learned enough in the school of hard knocks to know that he can often pick up pointers from others.

## Men to Train

In the larger shops it is possible to keep men on the same class of work most of the time. One man may work on axles, another on clutches and transmissions, another at a bench, relining brakes, while other men work on engines. The thought of the men seems to be that the engine work is the more important, requires the most skill and should be more highly paid, and for this reason the men may not want to do work on axles. The flat rate charges, however, meet this argument if the men are paid a proportion of the labor charge, for the man working on axles may be able to equal or exceed the reward which the engine man gets. Then the relative desirability of the two jobs will undergo a change. The right equipment, such as an axle stand, for getting the job up off of the floor will also help to dignify the axle work.

The thought of class in the various jobs around the shop means that care should be exercised in selecting men of the right type. Many of the applicants at the shops are young fellows whose parents have plenty of money and who are trying to find a job for Willie. Willie has always liked automobiles, so they

feel he should go into the automobile business. Fixing axles all day long, however, will not appeal to Willie and he will become a floater who is not much good in any shop.

For this reason wherever the employment situation has come up for discussion in dealer associations it has been pointed out that it is better to appeal to men already employed in some mechanical line, such as workers in can factories and punch press operators. Such men are accustomed to doing mechanical work and with a little training can adapt themselves to automobile service work.

## To Awaken the Man

The greatest obstacle in the way of making good men is the idea the man holds that he already knows all there is to be known about automobile repairing. With such an attitude of thought it is difficult to accomplish much. There is one possibility, however, if the man is not too set in his ways, and that is the shop conference held once a week in which jobs of the previous week can be discussed.

Cases will come up where some man in the shop has done a job in less time than it has ever been done before. If such is the case, there must be a reason. He will be proud of his accomplishment and will tell how he went at it. Then it is more than likely that the foreman will have a comeback job to report, and



*The man who thinks will soon be in charge and the other fellows will wonder why*



*The service salesman must know his stuff and be able to meet customers as an equal*

I believe it would be to the best interests of the owner of this car to have the following work done. Car no Job No. ....

Signed .....

WORK RECOMMENDED	REASON
ENGINE	
TRANSMISSION	
AND CLUTCH	
REAR AXLE	
FRONT AXLE	
ELECTRICAL	
SYSTEM	
BODY	
MISCELLANEOUS	

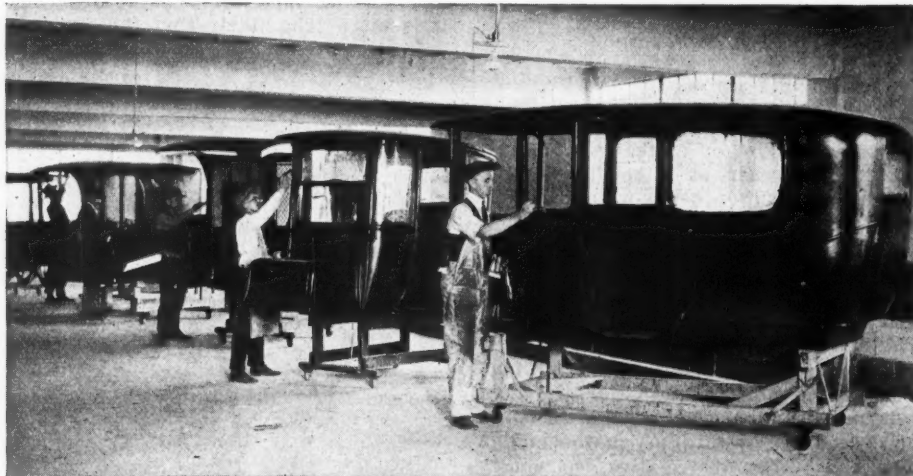
If the mechanic has a chart like this on which he can suggest sales, he will be interested in the whole business rather than in the bolts and nuts and his Saturday envelope

I believe that the owner of this car would be interested in the following equipment, which a car of this kind really deserves. Car no Job No. ....

Signed .....

EQUIPMENT	REASON IT SHOULD BE USED
ELECTRICAL ACCESSORIES	
BODY EQUIPMENT	
ENGINE EQUIPMENT	
CHASSIS EQUIPMENT	
FOR PROTECTION OF CAR	
FOR PROTECTION OF ENGINE	
FOR COMFORT	
FOR SAFETY IN DRIVING	
TO FACILITATE ADJUSTMENTS BY OWNER	
MISCELLANEOUS	

While working on some specific job, the wide awake mechanic will often find other work that should be done and a convenient card will enable him to report conditions as he sees them



Typical scene from an automobile painting school in Detroit where students are taught how to paint all kinds of motor vehicles

If the reason for the trouble has accurately been determined, he can make the occasion one in which constructive help is given rather than a "bawling out."

It may not even be necessary to mention the man who did the work, but the wrong way and the right way can be explained, which will give a fine opening to stress the need for more study of trade papers, more study of the factory meth-

ods and general alertness to grasp new methods for doing old jobs. In this way there is a chance of breaking down the workman's prejudice against "book larn-in'" and eventually it may be found that such a man will be ready to learn still more by going to the shop of a distributor or to a factory school. The men can be helped a great deal if the trade paper is passed along to them after the

service manager has digested its contents. In too many shops the boss is the only one to see the automobile papers, although the men could get much good from them.

### Training the Foreman in Factory Methods

When a dealer has taken on a new car, it is advisable to have the best man in the shop trained on the adjustments and minor attention that the car may need while it is comparatively new, in order that the maximum satisfaction may be rendered. In many cases it may be possible to send such a man to the factory or to the shop of the distributor of the car in question. Here the foreman will be shown those points of the adjustment which may require attention, and after he is familiar with the work, he will go back to his own town with more confidence in his own ability.

Then, six months later, it may be well for him to again visit the factory or the distributor and this time spend a little more time, going into those things that might develop trouble in six months, while after another six months another visit might be made, at which time he should have an opportunity of working on every part of the car, under the specialists who devote all their time to certain jobs.

In this way the shop foreman will gradually become familiar with the construction of the car and with the best methods of rendering service on it and he in turn can instruct the men under him.

### What Good Schools Can Do

A tree is known by its fruits, and a school might be said to be known by the men it turns out. For the serious-minded man, who has possibly had some experience, the automobile school can give many valuable pointers. The electrical information especially is of value to the man in the shop, for electricity is not one of those things which can be seen, and to repair electrical equipment intelligently, requires a certain imagination or visualization of what is going on inside of the windings of the generator or starter.

For best results the training obtained in the school should be followed up with apprenticeship work in some regular shop, where the man may go up against things as they really are. In one medium sized city, a local electrical association has co-operated with an electrical school, the graduates being taken into the various shops for a period of several months, and then sent back to the school for an examination. Those who pass this practical examination are given a card which indicates to a prospective employer a certain amount of work which the man has done.

For the dealer in the smaller towns, the school may be the means of giving a trusted man a knowledge which he could not otherwise obtain, but care must be taken to size up the man's point of view before either urging him to spend his own money, or before advancing him money for the purpose. Many mechanics tend to become discouraged when they start



to study, after years in which little attention has been given to books, and the tendency is to want to quit and go home after the first few days. That means that the shop manager must outline to his men the difficulties as well as the opportunities, and see that he has the will to stick to the work and see it through.

### Giving the Man a Broad View

Perhaps many mechanics are just mechanics and will never be anything else. To them the Boss is a hardboiled individual and is making barrels of money, but is too mean to give a fellow a raise now and then. Many a boss would like to be able to live up to at least a part of that opinion.

In some cases this opinion is so firmly entrenched that nothing will change it, but in other cases, points about business can be brought out in conferences that will show the men that only in proportion as the business as a whole succeeds will it be possible to increase the rewards that the shop men get.

At a shop meeting in one of the large Ford establishments in Chicago, the owner pointed out that during the past year, the sale of accessories represented the profits. The manager said that the sale of cars and the shop work had made the business break even, but that if it had not been for accessory sales, there would have been no profit with which to expand the business, put up a new building and give the men a bonus. It was a point that the average shop man would not think about and therefore a point to be frequently stressed.

### Every Mechanic a Salesman

Ridiculous? Not at all, if you work it right. Every mechanic can not talk to the car owner, of course. That is the job for the manager or the service salesman. Every man who works on the car, however, probably knows more about what it needs in the way of additional repairs and equipment, than either the owner or the service salesman to whom he talks. Then who is in a better position than the workman on the job, to indicate those needs.

Why not attach to the car a suggestion card as well as the regular shop order



Photos by courtesy of the Michigan State Automobile School, Detroit

*In electrical work, training is especially needed to make it possible for the man to visualize what is happening in the windings of the starter or generator*

card? The mechanic may have instructions to overhaul the clutch, but before he does so, he may start the engine to move the car to a stall or to try the clutch action. He has a chance to see how the engine starts and whether it misses or not, whether the carburetor floods, and how the starting system is working.

Then when working on and under the car he may see other work that should be done and after he has finished he can write down his suggestions for work to be done, or for accessories that should prove beneficial to the car and its owner.

One per cent of sales made in this way might go to the man making the suggestion and 2 per cent to the contact man making the sale. Then both would have an incentive to push the shop business to the limit, and would to some extent, at least, get to see the employers' point of view.

In the smaller shops the contact man

is often the proprietor himself, while in the larger shops an employee is selected for this work. The importance of the job can not be overestimated, for from the service salesman, the customer gets his impressions of the whole establishment. Perhaps worse than having the wrong sort of contact man is to have none at all, or to have a shop, where the car owner drives in and has to hunt all over the place before he can get someone who will talk to him about what his car needs.

The excuse may be offered that there is so much work in the shop that every one is busy, but this is no excuse. If the shop is small and it is necessary for everyone in it to be working the wrenches, then the one best qualified should do his work near the door, where he will at least know when someone comes in, and can find out what the customer wants, even if he is not able to give immediate service on the car in question.

## 23 Years Ago This Week In Motor Age

(From MOTOR AGE of May 16, 1901)

### Jeffery's Automobiles

Among the guests at the dinner of the Associated Cycling Clubs last Saturday night was T. B. Jeffery, of the G. & J. Manufacturing Co., now engaged in the manufacture, or rather in preparation to manufacture, automobiles at Kenosha, Wis.

Mr. Jeffery reiterated a statement made to this paper some weeks ago, that he will be in no hurry to place a machine on the market. He is still preparing. Some time this month he will have a machine ready to put on the road for

trial, but he is determined that when he offers it to the public it shall be in such shape that it can be operated by an inexperienced person without trouble and dissatisfaction. The Jeffery machine will be of the gasoline type.

### Seeking a Paradox

The Germans are after some fuel for the propulsion of motor vehicles which presents no danger of fire or explosion. A society has been formed and has offered a prize of \$750 to anyone who will accomplish the feat. The product, what-

ever it may be, must not be more expensive than gasoline, and the successful competitor must also discover methods of preventing fires in vehicles at present in use. Taken all in all, it appears that the man who gets the money will have to earn it.

### Putting Up the Signs

The erection of signboards around about New York has actually commenced. Two members of the Automobile Club of America have been deputized to mark the places where posts are needed and have been spending the greater part of their time at this work for the last two weeks. They started between New York and Bridgeport. When that is completed they will tackle the road to Albany.



# MOTOR AGE

Reg. U. S. Pat. Off.

Vol. XLV

Thursday, May 15, 1924

No. 20

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## Scattered Service

THE car owner who stopped at his service station the other day to have his brakes adjusted and was politely informed after the job was done that he would have to drive down the street a way to have his battery tested and his ignition looked over had a right to protest.

"When I bought this car," he said, "I thought I could get complete service on it from you. How many places do I have to go to? Will I have to hunt up a tire man when I need tire service? If the carbureter goes wrong will I have to seek out still another mysterious place where they tell me it takes a specialist to fix it? What about the speedometer and the vacuum tank and the steering gear? Aren't they all part of the car? Maybe I'll have to hunt up another place to spend my money for lubrication service.

"It reminds me of the time I went to a department store to buy a list of automobile supplies. Tires? Yes, a salesman to wait on me. And now some spark plugs. Oh, I'll have to get another salesman. It's another de-

partment, you see, although only the next aisle over. Now a spotlight. Still another department, another salesman, another transaction, another long wait for wrapping and change—and then I fled to save a little part of the day for other business, although I had intended buying quite a few other items.

"Why do they make it so hard to buy? And why do you dealers make it so hard for us to spend money for service? Some time I will find a service station that gives complete service and that is where I will stick."

## Summer Service Number

THIS is the Summer Service Number of MOTOR AGE for 1924. It comes to you at a time when the leaders of the automotive industry are paying more attention to service (maintenance) than ever before. The industry is gathering at Detroit for the service convention and automotive maintenance equipment show next week. For the first time factory men and dealers are to meet in a general service convention on equal terms and together they will look over the equipment that other manufacturers offer for use in economical and efficient maintenance work. This is a good sign. It must mean progress for the industry.

This Summer Service Number of MOTOR AGE is designed to help the dealer and maintenance man at a time when they need help. In this issue we have brought together a wealth of information and instruction. We have presented trouble-shooting charts which we believe are the most complete ever devised. We have collected maintenance data applying to the mechanical details of engines and chassis which should be highly prized by every subscriber. We have brought up to date the serial number tables for all American automobiles, thus providing a convenient and certain means of determining in what year a particular car was made.

The editors offer this issue to their readers with the feeling that they are providing something that will be useful in the every day business of the dealer and maintenance man. They may have made some errors in the compilation of the vast amount of material. If so they will gladly correct them. But on the whole they believe they have succeeded in compiling a very useful number of MOTOR AGE and in doing so they have gained inspiration for better effort in the preparation of the regular issues that you will receive every week.

## Title Laws

AUTOMOBILE title laws are recommended by the Insurance Advisory Committee of the Chamber of Commerce of the United States, as a means of combating automobile stealing. The committee would place the burden of proving ownership upon the possessor of a car. This suggestion is not a new one, but it is still as good as new. Certainly it is worth consideration.

## Maintenance Merchants Wanted

THE time has come when the volume of business done in providing motor vehicles with the supplies and maintenance attention required to keep them in profitable operation exceeds the volume done in the sale of new cars and trucks. It is only logical that this time should have arrived, for the accumulation of motor vehicles in service from year to year has been constant, reaching its greatest figure last year but destined to climb to an even higher figure this year.

It matters not that motor vehicles are made more durable, more nearly fool-proof, more efficient and economical in operation. They are still subject to wear and the mileage they are called upon to deliver grows from year to year as more highways are paved. Supplies are necessary for mileage, equipment must be had and many accessories are not only desirable but practically necessary for the car that would travel much.

This does not mean that the market for new cars is passing. According to the best authorities something like 2,000,000 cars a year will be required for replacement, not taking into account the requirements of new owners.

But if maintenance is the bigger part of the industry as a whole it should also be the bigger part of the business of the automotive retail merchant who wants to succeed to the greatest possible extent. Maintenance becomes, therefore, the predominant stock in trade of the retail part of the industry.

Naturally some readjustments in the trade must follow this gradual transformation in the industry which is taking place. Some dealers who have been very successful in the sale of new cars have not recognized the importance of maintenance service and as a result are suffering a loss of patronage.

Some dealers who know the importance of service have deliberately avoided it because they did not like it. They preferred to sell the car, take their discount and wash their hands of the transaction. They feared the come-back of a dissatisfied customer and lacked the courage and foresight to undertake to make all customers satisfied ones. Such a business is not built soundly and must go. It has no place in the automotive trade of today and tomorrow.

Every buyer of an automobile today realizes that his initial purchase represents only a small part of the outlay he will make during the life of the vehicle for its maintenance and operation. It is no good to him unless he uses it and he

cannot use it unless he pays for supplies and upkeep. He takes the vehicle home, then, not with the feeling that the transaction is closed and the price paid but that he must pay to maintain it in the best possible condition and operate with the greatest satisfaction. The strings of his purse are loose.

The merchants already in the business who expect to succeed and those who will enter it in the next few years must take these facts into consideration and adjust their view point accordingly. The car that is well serviced, or maintained, is a joy to its owner. Our industry has been subject to a great deal of criticism in the past for the shortcomings of service stations and maintenance shops. Much of the criticism has been justified and the car owner has wandered all over his county trying to find a shop that he could trust. Hither and thither he has gone upon the word of a friend that here or there he could find a reliable maintenance man. The condition must be changed and will be changed. In fact, it is in process of being changed.

The maintenance man who knows that his work is not the best takes only those jobs that come to him and cowardly justifies his failure to give satisfaction with the statement that he didn't solicit the business. The progressive maintenance man, the one who will prevail in the future, takes pride in his work and is not ashamed to go out and say to his prospective customers, "Send the car into me and let me fix it up." He usually specifies just what fixing up it needs and what it will cost, thus proving that he is a good merchant. Some of the most successful of these modern maintenance merchants are employing service salesman to call on car owners and solicit their business.

The good maintenance merchant is going to do the volume of business in the automotive trade in the future. There is no reason why this maintenance merchant should not be the car dealer, or to put it the other way, no reason why the car dealer should not be a maintenance merchant.

But there will always be some car dealers who will not live up to the high standards of maintenance required for the satisfaction of the car owner. There will be a volume of business that will overflow the car dealers' establishments. Thus the good maintenance man who may or may not be a car dealer will find his opportunity for a sound, profitable and permanent business.



# Big Detroit Gathering All Ready to "Go"

## Committee Chairmen Selected to Direct Convention Features

### Men Who Are Prominent in American Industry Will Do Best to Sustain Interest

NEW YORK, May 15.—Committee chairmen have been chosen to handle the different features of the World Motor Transport Congress which will be held in Detroit May 21-24 under the auspices of the National Automobile Chamber of Commerce. These selections include men prominent in the industry who will make every effort to keep the 100 or more delegates from all parts of the globe interested in the big convention.

John N. Willys, president of the Willys-Overland Co., and also chairman of the Foreign Trade Committee which is handling the congress, will be chairman of the session on automobiles and trucks and also the banquet chief. Howard Rees of the Hudson Motor Car Co. will handle the luncheon in honor of the delegates from Asia and Australia. William E. Metzger of the Columbia Motor Car Co. is to conduct the automotive educational tour, while Jay P. Rathbun of the White Co. will conduct the session on motor buses and taxicabs.

## Everything Ready for Big Events

DETROIT, May 12.—Everything is in readiness here for the World Motor Transport Congress, the National Automotive Service Convention, the Automotive Equipment Show and other large events of trade interest which are to occupy the calendar May 19-24.

Delegations from three continents arrived in the United States early for the transport congress in order to make observations and acquaintances before the meeting. It is expected most of them will be established in Detroit several days before the sessions begin. American delegates to the world congress and other gatherings are expected in force. From an automotive standpoint the different events offer an attraction of outstanding interest in the year's convention schedule.

Percy Owen, chief of the Automotive Division of the Department of Commerce, will preside at the session on business promotion and R. J. Archer, export manager of the Willys-Overland Co., will handle the luncheon in honor of the delegates from the Americas. F. A. Bonham,

Durant Motors and chairman of the N. A. C. C. Service Committee, will conduct the session on service, while J. H. Teague of the Hupp Motor Car Corp. will take the delegates to the automotive maintenance equipment show.

The session on automotive finance will be led by E. W. Davenport of Kidder, Peabody & Co., and Howard S. Welch of the Studebaker Corp. will preside at the luncheon in honor of the delegates from the Near East and Africa. The inspection tour of the highways will be in the hands of Edward N. Hines, chairman of the Wayne County Highways Commission, while J. D. Mooney of the General Motors Export Co. will handle the highways session.

### GERMANS HERE FIRST

NEW YORK, May 12.—Germany's delegation to the World Motor Transport Congress, which will be held in Detroit May 21-24 under the auspices of the National Automobile Chamber of Commerce, arrived on the Ballin, the first of the foreign contingents to check in for the big convention.

There are 15 in the party, headed by Ludwig Buchkremer, president of the German Automobile Dealers Association, Cologne, aged 86 years, but looking 30

(Continued on next page)

## Exhibitors at the Automotive Maintenance Equipment Show

The following concerns had been assigned space up to the time this issue went to press:

Albertson & Co., Inc., Sioux City, Ia.  
 Allen Electric Mfg. Co., Detroit.  
 Allyne-Zerk Co., Cleveland, O.  
 American Sales Book Co., Ltd., Elmira, N. Y.  
 Auto-Hone Co., Inc., Buffalo, N. Y.  
 Automotive Electrical Service Assn., New York City.  
 Automotive Maintenance Machinery Co., Chicago.  
 Automotive Merchandising, New York City.  
 Avey Drilling Machine Co., Cincinnati, O.  
 Battery Equipment & Supply Co., Chicago.  
 Bassick Manufacturing Co., The, New York City.  
 Bastian-Blessing Co., Chicago.  
 Berger Manufacturing Co., Canton, O.  
 Black & Decker Manufacturing Co., Baltimore, Md.  
 Bonney Forge & Tool Works, Allentown, Pa.  
 Brunner Manufacturing Co., Utica, N. Y.  
 Canedy-Otto Manufacturing Co., Chicago Heights, Ill.  
 Cedar Rapids Engineering Co., Cedar Rapids, Ia.  
 Champion Pneumatic Machinery Co., Chicago.  
 Class Journal Co., The, New York City.  
 Cleveland Twist Drill Co., Cleveland, O.  
 Clipper Belt Lacer Co., Grand Rapids, Mich.  
 Comfort Printing Specialty Co., St. Louis.  
 Crane Puller Co., Arlington, Mass.  
 Crawford-Lewis Corp., Detroit.  
 Crescent Tool Co., Jamestown, N. Y.  
 Curtis Pneumatic Machinery Co., St. Louis.  
 Dearborn Equipment Co., Kalamazoo, Mich.  
 Durand Steel Locker Co., Chicago.  
 Eastern Machine Screw Corp., New Haven, Conn.  
 Fawcett Wrench Co., New York City.  
 Fleming Machine Co., Springfield, Mass.  
 Forest Electric Co., Newark, N. J.  
 Foster-Johnson Reamer Co., Elkhart, Ind.  
 Gaylord Manufacturing Co., Paterson, N. J.  
 Gibb Instrument Co., Bay City, Mich.  
 Gisholt Machine Co., Madison, Wis.  
 Globe Manufacturing Co., Battle Creek, Mich.  
 Globe Register Co., Cincinnati, O.  
 Greb Co., Boston, Mass.  
 Grinder Sales Co., Detroit.  
 Hall Cylinder Hone Co., Toledo, O.  
 Hansen Manufacturing Co., Cleveland, O.  
 Hempy-Cooper Manufacturing Co., Kansas City, Mo.  
 Hercules Products Co., St. Joseph, Mich.  
 Hinckley-Myers Co., Jackson, Mich.  
 Hoe Corp., Poughkeepsie, N. Y.  
 Ernest Holmes Co., Chattanooga, Tenn.  
 George L. Hunt Manufacturing Co., Boscobel, Wis.  
 Husky Wrench Co.

Kellogg Manufacturing Co., Rochester, N. Y.  
 Kent-Moore Organization, Detroit.  
 K. D. Manufacturing Co., Lancaster, Pa.  
 Laminated Shim Co., Inc., Long Island City, N. Y.  
 Lifter Corp., New York City.  
 Louisville Electric Manufacturing Co., Louisville, Ky.  
 David Lupton's Sons Co., Philadelphia, Pa.  
 Manley Manufacturing Co., York, Pa.  
 Mann & Briggs Manufacturing Co., Chicago.  
 Manufacturing Equipment & Engineering Co.  
 Manufacturers Sales Co., Detroit.  
 Marshall Electric Co., St. Louis.  
 McQuay Norris Manufacturing Co., St. Louis.  
 Monogram Lens Co., New York City.  
 Motor Service, Chicago.  
 Naperville Machine Co., Inc., Naperville, Ill.  
 National Standard Co., Niles, Mich.  
 North Brothers Manufacturing Co., Philadelphia.  
 North East Service, Inc., Rochester, N. Y.  
 Northwestern Chemical Co., Marietta, O.  
 Precision Truing Machine & Tool Co.  
 Quick Suds Soap Co., Cambridge, Mass.  
 The Raybestos Co., Bridgeport, Conn.  
 Sheldon Machine Co., Chicago.  
 Society of Automotive Engineers, New York City.  
 Speed-O-Multiple Valve, New York City.  
 Smith's Inventions, Inc., Minneapolis.  
 Snap-On Wrench Co., Chicago.  
 L. S. Starrett Co., Athol, Mass.  
 Stevens & Co., New York City.  
 Storm Manufacturing Co., Minneapolis.  
 Streeter-Arnet Weighing & Recording Co., Chicago.  
 Surface Combustion Co.  
 Taft-Pierce Manufacturing Co., Detroit.  
 Timken Roller Bearing Service & Sales Co., Canton, O.  
 Tinius Olsen Testing Machine Co.  
 United Motors Service, Inc., Detroit.  
 United States Air Compressor Co., Cleveland, O.  
 United States Electrical Tool Co., Cincinnati, O.  
 Universal Tool Co., Garwood, N. J.  
 Van Norman Machine Tool Co., Springfield, Mass.  
 Vellumoid Fiber Finishing Co., Boston, Mass.  
 Vlchek Tool Co., Cleveland, O.  
 W.-A. Manufacturing & Sales Co., Newark, N. J.  
 Walden-Worcester, Inc., Worcester, Mass.  
 Wall Pump & Compressor Co., Quincy, Ill.  
 Wayne Tool Manufacturing Co., Waynesboro, Pa.  
 Weaver Manufacturing Co., Springfield, Ill.  
 Joseph Weidenhoff, Chicago.  
 K. R. Wilson, Buffalo, N. Y.  
 Yellow Jack-It Manufacturing Co., Chicago.  
 X. Laboratories, New York City.



## Durant Stock Increase Would Mean Taking Over Star Assets

### Shareholders of Parent Concern Asked to Ratify Proposal Affecting Capitalization Plan

NEW YORK, May 15.—W. C. Durant has asked stockholders of Durant Motors, Inc., to ratify a proposal for an increase in the authorized capital stock of the company from 2,000,000 to 3,000,000 shares in order that the parent concern may take over the assets of Star Motors, Inc. A vote on this proposal will come up at the annual meeting May 23.

Under the deal now existing between the two, Durant Motors, Inc., is the manufacturer and Star Motors, Inc., is the sales agent. If Durant Motors purchases the Star assets, it may be the latter company will be dissolved and its stock distributed among Durant shareholders or it can be continued as a holding company, with Durant Motors functioning in both manufacturing and sales. Which step will be taken will depend upon the vote of the stockholders. If it is decided to turn over the Star assets to Durant Motors, it will result in the nullification of the sales contract between the two organizations so that in future business will be conducted by the Star distributors direct with Durant Motors, it is said.

President Durant's letter to stockholders says in part:

"Your directors feel that the relations between your corporation and Star Motors, Inc., must of necessity be so intimate that far better results would be obtainable if all the assets of Star Motors, Inc., could be acquired by your corporation, and the business of the two enterprises could be conducted without divergence in interests.

For that reason a proposal has been made to Star Motors, Inc., to acquire all of its assets, for a consideration payable in the stock of Durant Motors, Inc., in an amount which would enable the stockholders of Star Motors, Inc., to receive one share of stock in your corporation for every two shares of stock of Star Motors, Inc., now held by them."

## Senate Votes to Eliminate Parts and Accessory Taxes

WASHINGTON, May 12.—A greater victory than expected has been achieved by the automotive industry in its fight against unfair excise taxes through action of the Senate Friday night when it was voted 43 to 38 to eliminate the entire tax on parts and accessories instead of reducing it from 5 to 2½ per cent, as passed by the House and approved by the Senate Finance Committee.

There still remains in the measure the proposal to eliminate taxes on truck chassis costing less than \$1000 wholesale and on truck bodies costing \$200 or less. This entire section is expected to go to conference without further changes and it is hoped that it will be favorably acted upon.

## Are There Any Other Nominations?

SACRAMENTO, Cal., May 12.—Claims of Adams County, Iowa, that it is the banner automobile owning county of the nation sound rather humorous here. Adams County claims 1.61 cars for every family.

Now comes Orange County, Calif., with a registration in 1923 of one automobile for every 1.9 persons. On the basis of five persons to a family this makes 2.7 automobiles for every family.

There is an automobile for every 3.11 persons in California or, on the basis of five to a family, 1.64 autos per family, better than the record of Iowa's banner county.

(Continued from preceding page)

years younger. Mr. Buchkremer at one time was one of Germany's biggest body builders, but since the war has entered the retailing end of the automotive industry. Among those in his party are: Johannes Buschmann, director and secretary of the German Automobile Dealers Association, Berlin; Paul Fehling, Berlin; Hermann Boissbarth, Munich; Waldemar Dittman, Weimar; Louis Glueck, Dresden; Friedrich O. Lueg, Bochum; Anton Ruetgers, Aix-la-Chapelle, and Carl Stratemann, Bielefeld.

### Delegation Welcomed

Arriving in New York, the delegation was welcomed by George F. Bauer, secretary of the Foreign Trade Committee of the N. A. C. C.; M. H. Hoeppli, of the General Motors Export Co., and Augustus Zimmerman of the Automotive Division of the Department of Commerce. A luncheon was given by Secretary Bauer at the Automobile Club of America, at which the visitors were introduced.

The Germans believe that lifting the embargo against the importation of automobiles will result in American manufacturers selling at least 25,000 cars in Germany in the year following. They say demand for cars is keen, the only drawback being the lack of money. At the present time German production does not total more than 35,000 a year. Closed cars are growing in popularity and it is said that probably 50 per cent of the present crop is of that type, in comparison with 75 per cent open cars a year ago.

### W. S. C. REPORTS PROFITS

MARYSVILLE, Mich., May 12.—Wills Sainte Claire, Inc., reports earnings for the first quarter of 1924 showing a substantial profit with cash on hand upwards of \$2,000,000 and no indebtedness other than current accounts.

In a statement made by A. H. Moorman, treasurer and comptroller, the company is said to be in a very strong financial position with current assets approximately eight to one over current liabilities.

## Expect Higher Price Trend at End of Industry's Fiscal Year

### Statement by Sloan Taken to Mean G. M. C. Units at Least Will Raise Rates

NEW YORK, May 12.—"It is my opinion that such announcements as the automotive industry has been accustomed to make during the summer will this year indicate a higher trend of prices," is the significant statement made today by Alfred P. Sloan, Jr., president of the General Motors Corp. This, say those who are well informed on present conditions in the industry, means that higher prices may be looked for around July 1, the end of the industry's fiscal year.

It is pointed out that manufacturers in settling the present prices have figured on maximum production as the basis for these lists and that when production is not up to this point the profit per unit decreases.

Right now they say the big producers are making only about half what they were getting per car last year so that it is natural to expect that higher prices are in order. As the statement is interpreted it is taken to mean that the General Motors units, at any rate, will advance their prices this summer and it is thought others will do likewise. It is not expected necessarily that General Motors will bring out any new models in doing this, it being predicted that the advances will be made on present production.

## Earl Cooper on Hand—Hits It Up at 100.3 Clip in First Test

INDIANAPOLIS, May 10.—Earl Cooper, a veteran automobile racing driver when many of the present generation of speed pilots were in swaddling clothes, has chosen a Studebaker Special as his mount in the Twelfth International 500-mile race to be held at the Indianapolis Motor Speedway, Friday, May 30.

Cooper has already arrived at the track with his speed creation, a vivid robin's egg blue in color. On his initial trial spin he fanned the bricks at a 100.3-miles-an-hour gait.

### CLOTHING PRICES CLIMB

NEW YORK, May 12.—The average American workingman and woman have been paying steadily increasing clothing bills for the last two years, according to a nation-wide study of apparel prices just concluded by the National Industrial Conference Board of 247 Park Avenue. Even since last November, with food and some other items in the family budget showing decreases, the average increase in clothing prices has been one per cent.

Taking the prices of two years ago as a basis for comparison, it is found that the cost of a year's supply of things to wear in the average American family, considering the latest data available, is more than 14 per cent. higher than it was then.

## Work to Start Immediately on General Motors Proving Field

**Grounds Will Be Used for Outdoor Tests by Different Units of Corporation**

NEW YORK, May 12.—Work will begin at once on the General Motors proving ground, which will be located in the neighborhood of Milford, Mich., and which will be used by the units of the big corporation as an outdoor laboratory where their products may be put to practical test. The tract of land set aside for this purpose consists of 1146 acres and is within easy distance of Detroit, Flint, Pontiac and Lansing, where the corporation's main car plants are located.

The contract for the road work has been let to a Detroit concern, with W. J. Lehner of Mt. Clemens, Mich., as engineer in charge of construction. The work of building more than eight miles of concrete and gravel roads which will be used for testing cars will take about six months, it is estimated. Approximately two miles of concrete roadway, 20 feet wide, will be built; one mile will be a perfect level, straightaway course, with 20 feet gravel turns, and the other mile will be concrete road of varying grade, up to as high as 12 per cent. All of the concrete construction will be installed in accordance with the specifications of the Michigan State Highway Department and the roads will be like the best of the state highways—and wider than any except the chief trunk lines.

Six miles of 20-foot gravel road will be built, with necessary culverts and fills, and there will be a wide variety of grade in these roads, reaching a maximum of 24 per cent for test purposes.

A contract also has been let for the erection of a garage on the property which will have a capacity of 40 cars. The building will be 60x200 and will have complete laboratory and machine shop equipment. Later, a contract will be closed for the erection of housing quarters for General Motors executives and for the operating staff at the proving ground, which will be under the direction of F. M. Holden. The housing quarters will furnish accommodations for 35 to 40 people.

### NOT A HORSE ON HIS FARM

BURLINGTON, Ia., May 15. — Des Moines County has a 100 per cent tractor-power farm. It is the J. F. Deems farm on Agency Road and Roy Murphy, who has been managing it, attracted great crowds this week at his tractor demonstrations. Nearly all of the 200-acre farm is under cultivation and the only two horses on the farm have been sold and are awaiting their owner. Recently a tractor plowed 19 acres in a 14-hour day, while a neighbor farmer with two teams was four days plowing 20 acres.

## 254 Miles Copper Tube a Day

DETROIT, May 12 — Statistics issued by Ford Motor Co. on the radiator department at the Highland Park plant show the use of 254 miles of copper tubing a day to meet the present production schedule of approximately 9,000 radiators.

In addition to the copper tubing other materials used in a day's output comprises 38 tons of sheet steel, six tons of terne plate, 67 tons of brass, nine tons of solder, 18,000 malleable castings, more than four miles of brass tubing for drains and 1,068 gallons of acid.

In the making of a single radiator 140 operations are necessary and every step of the manufacturing process requires unusual care, the company states. Every part is closely scrutinized before assembly, and assembled radiators are tested under water at an air pressure of 15 pounds a square inch.

## 66 Per Cent Shipping Increase for Columbia Motors in April

DETROIT, May 12.—Shipments of cars during April show a 66 per cent increase over March, according to advices from the Columbia Motors Co., Detroit, manufacturers of the Columbia Six. All indications point to the fact that the dealer organization is backing the new administration to the limit, it is said.

"The Columbia Motors Co.," says Fred Wilson, vice-president and salesmanager, "started the month of May with more orders on file than any month during 1923. These orders along with those promised by dealers bid fair to keep the factory working at top speed to supply the demand."

"We at the plant are expecting a steady acceleration of business throughout the summer months, with no slow down in sight. As far as Columbia is concerned we see no reason to be pessimistic regarding the automobile situation."

### RULINGS HIT SPEED TRAPS

COLUMBUS, May 12.—Following closely on the action of Judge J. H. Lyons of the Mahoning County Court at Youngstown, who ruled that justices of the peace in Ohio are without authority to fine motorists for speeding on highways, Judge Robert Patterson of the Montgomery County court at Dayton, handed down a parallel decision in which he held that justices of the peace in speeding cases can only bind over the accused to the grand jury. The two decisions are a victory for the Ohio Automobile Association and local automobile clubs which have been fighting the speed trap and the wayside court. Action of higher courts on these decisions is awaited with interest.

## Signs Point to Increase Over April in Production for May

**Policy Is to Gradually Clear Out Dealers' Stocks Without Sacrificing Factory Organization**

DETROIT, May 15.—Production totals for the month of May will show increases over April according to present indications, due to the plans of some leading companies to extend schedules over the curtailed schedules of late March and April. The indications, however, are against any general resumption of large production, but rather that better weather and increased buyer confidence will warrant increased operations.

Stocks of cars in dealers' hands are reported showing gradual reduction under the influence of steady if not conspicuous buying. The strategy of the entire industry is being directed to clearing out all of these as rapidly as possible without sacrificing factory organization through marked slowing down. General confidence is expressed that this will be accomplished in the next 45 days at most permitting gradually increased operation throughout the period.

Ford output during April approximated 175,000, with retail deliveries running to possibly 230,000, when complete figures are available. May production is scheduled to hold about this same figure while deliveries are expected to run in excess of 250,000, and with good weather and good sales conditions may approximate 300,000.

### At Other Factories

Capacity operation will continue at Dodge and the Hudson-Essex figure will continue at close to the scale of operations during the two past record months. Some factories, notably Buick, will increase operations in May. The general tendency is toward increased operations during the month but as this is entirely a matter of developments of the month, factories are not setting definite schedules.

Shortages of particular models are being reported by factories while other models in the same line are slow in moving. This apparent popularity in certain models will provide sufficient buying to warrant rather extensive operations at factories while awaiting the period in which complete operation can be safely resumed. In the meanwhile, however, factory organizations are intact and there is not regarded much likelihood of any serious unemployment developing.

### LAUNCH CREDIT BODY

WISCONSIN RAPIDS, Wis., May 12.—A group of local business men and bankers of Wisconsin Rapids, Wis., has organized the Wisconsin Motor Credit Corp., organized under the laws of Wisconsin, principally to serve Wood county dealers in financing sales of cars. D. B. Philleo has been elected secretary-treasurer and will serve as manager until an active assistant is selected. D. H. Cooney is president.



## N. A. C. C. Book on Industry Now Ready for Distribution

**Many New Features in 1924 Edition  
With Interesting Revisions of  
Past Figures**

NEW YORK, May 12.—The 1924 edition of "Facts and Figures of the Automobile Industry," as compiled by the National Automobile Chamber of Commerce under the direction of John C. Long, manager of the educational department, is off the press and is ready for distribution.

Many new features are found in the book, all of which add to its value and make it a clearing house for information concerning the industry, containing as it does statistics which have been carefully compiled and which tell of the wonderful progress made by makers of automobiles, parts and accessories.

The book also revises some of the more important figures announced in the preliminary survey on Jan. 1 as to production, registration, exports, etc. The revision shows that the production for 1923 was 4,086,997, instead of 4,014,000, the increase being brought about by Ford's Canadian production, which was not included in the original estimate. The wholesale value of cars and trucks also is changed, the revision giving \$2,004,952,716, instead of \$2,510,885,000. The estimated grand total of wholesale values of the industry's work, including all replacement parts and tires, is \$2,804,952,257.

### Motor Vehicle Taxes

Motor vehicle taxes in 1923 amounted to \$471,548,000, according to the book, which includes for the first time municipal taxes, which last year reached a total of \$13,079,209, exclusive of property taxes on garages or local taxes levied on the retail business. Federal taxes amounted to \$157,707,255, made up of \$106,280,234, passenger cars; \$10,908,777, commercial vehicles; \$38,610,844, parts, tires and accessories, and \$1,907,399, vehicles for hire. State taxes reached \$300,761,802, made up of \$188,947,862 registration fees, including drivers' licenses; \$36,813,939 gasoline taxes, and \$75,000,000 personal property taxes.

Placing the total registration for 1923 at 15,092,177, Editor Long also tabulates the registration in 63 of the largest cities having more than 100,000 population. This shows New York with 363,590, and Chicago, 265,235. The Los Angeles count is 426,935, but that includes the entire county. The Detroit total of 230,594 also includes the county. Tacoma is estimated at 264,470, of which 122,533 are motor trucks, which makes Tacoma the leader in the use of commercial vehicles, New York City having 78,915 and Chicago 40,052. Of the cities in the 50,000-100,000 class, Fresno, Cal., is the leader, with 45,670, of which 43,823 are passenger cars.

### Factory Investment

The book estimates that the capital in-

## U. S. Yearly Motor Bill 8 Billion

AKRON, O., May 12.—Firestone Tire and Rubber Co. officials estimate the annual automobile cost of the United States at approximately \$8,000,000,000 exclusive of taxes and interest charges.

The largest item of the annual automobile bill, according to these figures is depreciation which is placed at \$1,800,000,000. Repairs and supplies are estimated at \$1,000,000,000. Gasoline costs are \$835,000,000; tire costs \$450,000,000 while the new cars purchased last year are valued at \$1,500,000,000 although this last figure is included in the \$8,000,000,000.

The same officials also estimate the number of cars in operation at the present time has passed the 16,000,000 mark after providing for the scrapping of the usual number of automobiles.

vested in the motor vehicle manufacturing business is \$1,571,722,411, with \$579,002,686 spent for wages and salaries. There are 3,105,350 persons employed in the industry, of which 2,879,370 are directly employed. There are 318,100 motor vehicle factory workers; 300,000 parts and accessory factory workers; 114,750 tire factory workers; 151,000 motor vehicle dealers and salesmen; 135,000 supplies, accessories and parts dealers and salesmen; 110,000 garage employees; 90,000 tire dealers and salesmen; 345,000 repair shop employees; 470,000 professional chauffeurs; 60,000 gasoline refinery and oil workers, and 5500 automobile financing and insurance.

The number of car manufacturers is placed at 90, and there are 147 motor truck manufacturers.

## Merchandising Talks Heard by More Than 5000 Persons

ST. LOUIS, May 12.—More than 5,000 persons, comprising automobile dealers, bankers, salesmen and sales managers in 15 principal distributing points of the southwest and west enthusiastically hailed the stimulating sales message of W. B. Burruss, special sales consultant of the National Automobile Dealers' Association in a series of meetings just concluded. Mr. Burruss' subject was "100 Merchandising Ideas; Even Shakespeare Was a Salesman." He was accompanied by C. A. Vane, general manager of the N. A. D. A., who correlated the special sales inspiration with the general picture of conditions confronting the dealer in a talk on "Five Per Cent and the Dealer Outlook."

Dealers in all the cities visited were unanimous in expressions that the meetings, designed especially to inform salesmen of general business conditions in the industry and to improve selling methods, were highly valuable.

## Only Sale by Licensed Motor Dealer Is Valid Now in Canada

**New Legislation in Force Which  
Protects the Claim of Stolen  
Car's Owner**

MONTREAL, Can., May 12.—Information has been received by the Montreal Automobile Trade Association that the new legislation passed at the last session of the provincial government is now in force and that the sale of an automobile to be legally valid must be made by an authorized licensed dealer, who supplied the government with a bond protecting buyers in case the automobile sold by the authorized dealer is a stolen car.

From now on the owner of a stolen car can claim and regain possession of his automobile, at any time, from the party who has it on hand when the stolen car is found.

The buyer of the stolen automobile or the party who has such automobile will lose both the car and the amount he has paid for it in every case, unless he has bought the car from an automobile dealer who has supplied a bond to the government and who has been specially authorized and licensed to sell automobiles.

The bond that the authorized licensed vendor will have to supply to the government before they can obtain their license is to be a guarantee to the ultimate purchaser that if the car he has bought from such licensed automobile dealer is a stolen car his money will be refunded without any difficulty.

The government is now making arrangements to issue such licenses to automobile dealers and until the licenses are obtained, the dealers who will display them in their places of business, the buying public must be very careful and convinced of the responsibility of the firm they are buying their car from, as otherwise they may involve themselves into very costly difficulties.

The legislation was passed at the instance of the Montreal Automobile Trade Association, of which Adolstan Levesque is secretary.

### MONZA RACE ENTRIES

PARIS, May 12.—Twelve entries have been received up to the present for the 500-mile race to be held on Monza track, near Milan, Italy, for the Italian Grand Prix, on September 7th. The cars comprise four Fiats, three Mercedes, three Alfa-Romeo, and two cuff-valve Schmidts. This race is for 122 cubic inch cars and has prizes totalling 250,000 lire.

### STAGE AUTO SHOW

MT. STERLING, Ill., May 12.—More than 60 cars of various models and makes were shown in a huge tent here in an auto show and style display arranged by the auto dealers in conjunction with other business interests.



## WITH THE ASSOCIATIONS

### Name Sectional Chairman

WASHINGTON, May 12.—A. W. Harrington, chief of the engineering section of the Q. M. C., Camp Halabird, was elected chairman of the Washington section of the Society of Automotive Engineers on the occasion of their annual election. The meeting marked the closing session of the 1923-1924 period.

Chester H. Warrington of Warrington Motors Company, retired as chairman and automatically becomes a vice chairman of the Society. Conrad H. Young, mechanical engineer was re-elected secretary and treasurer of the organization. Chairmen of the different sections will be appointed by the new chairman, some time prior to the October meeting.

A general discussion was had on the question of standardization of automobile signals and it was decided that no better work could be taken up by the engineers than to foster such a standardization program. It is one of the outstanding needs of the industry. Col. F. H. Pope, of the Motor Corps, Quartermaster's Division of the Army, told the members.

### Holyoke Dealers Elect

HOLYOKE, MASS., May 12.—At the annual meeting of the Holyoke Automotive Dealers' Association, K. R. Charlton, Ford dealer, who had served as treasurer of the association since its organization, was elected president, and H. C. Brewstear, Reo dealer, the retiring president, became treasurer. R. J. Laporte was re-elected to the office of secretary.

Plans were outlined for a banquet May 20, at which it is proposed that every employe of every member, in addition to the dealers themselves, shall be present. Leon Peltier, K. R. Charlton and R. J. Laporte constitute the committee on arrangements. The association purposes to keep up its policy of frequent meetings which has been found valuable in maintaining association spirit. Gratifying progress in solving the used car problem was reported.

### Offer Automatic Signals

SPRINGFIELD, O., May 12.—The Springfield Automobile Club of which Arthur J. Todd is president has made an offer to the city officials to furnish the material for five automatic signals for the control of traffic at the street intersections in the central district. A trial signal set will be installed at the intersection of High and Limestone streets, Secretary Harry D. Brydon says.

### Plan Atlanta Outing

ATLANTA, GA., May 12.—The annual summer outing of the Atlanta Automobile Association is to be held this year in June instead of July or August as heretofore, it has been announced by Secretary C. V. Hohenstein. Preparations for the outing are under way, and the indus-

try in Atlanta will declare closed shop for the event.

It has also been announced by Hohenstein that the battery dealers' division has adopted the exchange plan of credit information that is in use among the other divisions, including the tire, accessory and automobile divisions.

## New Tire Association to Incorporate

ST. LOUIS, May 2.—The newly organized Associated Tire Dealers of St. Louis has decided to incorporate. Also an emblem has been adopted which is to be displayed by members in their salesrooms. The emblem is in the shape of a tire and carries the inscription: "Member of the Associated Tire Dealers, of St. Louis. A Bond for Better Relations." A. P. Woerble, of the Beverly Rubber Company, this city, is president of the association.



A. P. Woerble

### Fight New Ordinance

CHICAGO, May 12.—The Chicago Automobile Trade Association has gone into court to fight a new ordinance requiring automobile dealers who run repair shops to pay a license fee on the repair shops. Members of the association who have been served with police slips pertaining to this license are advised to decline payment and send in their tickets to the association to be handled there. The ordinance in question was passed following repeal of another measure which exacted an automobile salesroom license fee.

### Form N. A. D. A. Chapter

LITTLE ROCK, May 12.—Steps for the formal organization of an N. A. D. A. chapter of automobile dealers were taken here recently. Five members already were here. Five more made application as result of luncheon meeting. P. F. Drury and Lynn M. Shaw, assistant general managers of the National Automobile Dealers' Association advised with the dealers on the steps to be taken to form a permanent local chapter.

### All Set For Banquet

HORNELL, N. Y., May 12.—The annual banquet of the Hornell Automobile Club will be held on May 15. Speakers will be Lt. Gov. George R. Lunn of Schenectady, Arthur W. Brandt of the state highway commission, George H. Deihl and Day H. Loels of Buffalo.

## Detroit's Retail Deliveries During April Totalled 9,068

### Gain Over March Almost Entirely in Open Models. Weather Influence Plainly Shown

DETROIT, May 12.—Deliveries of new cars at retail in the Detroit district for April totalled 9068, which compares with a March total of 8368, and a total of 6784 for April last year. The gain over March is represented almost entirely in open cars, the figures in open and closed models for the two months being 3863 and 5205 for April and 3309 and 5059 for March. This would indicate definitely that better weather has helped sales.

Comparison of April this year with last further bears out weather as probably the most important element in holding back business this year so far as this district is concerned. Open car sales in April, 1923, were 3900, as compared with 3863 this year. Closed car business in April, 1923, was 2884, as compared to 5205 for the month just closed.

### Ford Deliveries

Ford deliveries in April this year were 5014—2131 open and 2883 closed. This was 55 per cent of the total. Combined with other makes in the light car class the total was 6173, or 68 per cent. Total deliveries in the \$1000 price class and under were 7396, or 80 per cent, of the month's business; medium-priced totals were 1427, or 16 per cent, and high-priced lines were 257, or the remaining 4 per cent.

In April of last year, the Ford total was 2333, or 34 per cent of the total. All low-priced lines delivered 3869, or 57 per cent; \$1000 and under deliveries were 4754, or 70 per cent; medium-priced lines 1771, or 26 per cent, and high-priced lines 224, or the remaining 4 per cent. In March this year Fords were 57 per cent of the total, low-priced lines 71 per cent, \$1000 and under 80 per cent.

### Leading in Deliveries.

Companies leading in deliveries other than Ford were: Chevrolet, 826; Dodge, 411; Hudson-Essex, 401; Buick, 381; Studebaker, 307; Overland, 167; Maxwell, 161; Oldsmobile, 127; Star, 123; Oakland, 120; Jewett, 117; Hupmobile, 116.

Truck business for the month totalled 741 deliveries, which compares with 674 in March and 604 in April last year. Of the total 458 were Fords. Chevrolet had 27, Dodge 26, Reo 25, Federal 22, Mack 20, Gotfredson 19, G. M. C. 17, White 15, New York 12, Autocar 10. Fifteen tractors were delivered.

### MAY MAKE ROAD OF CANAL

WASHINGTON, May 12.—A bill proposed before Parliament presents a novel idea in transportation, says Hugh D. Butler, acting commercial attache at London, in a report made public by the U. S. Department of Commerce. It purposes the draining of Regent's Canal and its conversion into a sunken road for motor freight traffic.

## Three Cars, 75 Per Cent Ford Parts, Entered at Indianapolis

**Barber-Warnock Specials, Similar to One Finishing Fifth Last Year, Among Starters**

INDIANAPOLIS, Ind., May 12.—Three cars, to be known as the Barber-Warnock Specials, constructed of 75 per cent Ford parts, have been entered in the Twelfth International 500-mile automobile race for \$100,000 to be held at the Indianapolis Motor Speedway on Friday, May 30.

Last year, a car identical with the three creations entered for the 1924 classic finished fifth, L. L. Corum, the driver, leading all foreign makes of speed creations to the finish wire.

An attempt is being made, according to Barber and Warnock, the entrants, to bring one of Europe's leading pilots, a driver who previously has won a 500-mile race at Indianapolis, to the Hoosier circle as captain of the team and a driver of one of the cars.

None of the drivers for the Barber-Warnock team has as yet been named, but it is understood several dirt track pilots, who never before have driven the Indianapolis course, but who are adept at handling the small rejuvenated Fords, will be given an opportunity to try for driving berths on the team.

The Barber-Warnock Special which finished fifth last year excited no end of attention from the 150,000 people who saw the race because at the start it seemed so hopelessly outclassed.

The cars this year will be able to maintain a speed of 95 miles an hour, it is predicted. They are easy to handle on the Indianapolis track.

Arthur Chevrolet, famous racing driver, and C. O. Warnock are the engineering lights behind the Barber-Warnock Specials and their speed and stamina.

### 2,153 OLDS DEALERS IN U. S.

LANSING, Mich., May 15.—Within less than a year the Olds Motor Works has more than doubled the size of its dealer organization, says a factory statement.

Several months before the new 1924 six-cylinder Oldsmobile was introduced late last fall, there were 1296 Oldsmobile dealers in this country. Before the new car had been fairly launched this number was materially increased. From October 1, 1923, to May 1, 1924, the number of new dealers added has averaged better than 200 a month, bringing the total number of contracted dealers to 2153. Beside this number there are approximately 500 sub-dealers and other selling connections handling the Oldsmobile.

### STATE HAS 2,865 DEALERS

SACRAMENTO, Cal., May 12.—Will H. Marsh, chief of the division of motor vehicles, announces that records of the division show that there are 2,865 automobile dealers doing business in the state of California at the present time. There are 117 motorcycle dealers.

## Iceland Closed as Motor Market

WASHINGTON, May 12.—Iceland, as a market for automobiles, and motorcycles, while small, is to be closed for two years by an official decree of the Icelandic Parliament, just passed, according to notice sent to the U. S. Bureau of Foreign and Domestic Commerce.

Not only are automotive products affected, but hundreds of other commodities imported from various parts of the world.

The idea back of the embargo is to force Icelanders to revert to the simple life, thus causing thrift and improve the value of the Icelandic crown, now greatly depreciated.

The law is general and applies to all countries. Automobile repair parts and tires will be admitted. The U. S. exports to that country during 1923 totaled 2 vehicles, valued at \$2,666.

## GMC April Sales Drop, But First Four Months Are Ahead

NEW YORK, May 12.—April sales of cars and trucks by General Motors units totaled 57,000, a decided drop from the pace maintained in the first quarter, and below March's 73,756. A year ago April sales reached 75,822.

Sales for the first four months of this year, however, are in excess of the same period in 1923, being 269,670 as against 252,080. The April drop is in keeping with the general slowing down of retail sales in that month, occasioned by the backward Spring.

Figures as given out show the following sales for Buick, Cadillac, Chevrolet, Oakland, Oldsmobile and GMC trucks:

	1924	1923
January .....	60,918	49,162
February .....	77,996	56,427
March .....	73,756	71,669
April .....	57,000	75,822
May .....		75,393
June .....		69,708

### SEARCH 'EM IN ONTARIO

BUFFALO, N. Y., May 12.—American tourists who take their cars into Ontario, this summer, will do well to remember that police officials have power to stop and search any automobile on the highway for liquor or drugs without a search warrant, according to recent legislation. This change has been adopted because of the belief that many returning Quebec cars driven by residents of both Ontario and the states return with liquor stowed away in some part of the machine.

### CORDUROY BUSY

GRAND RAPIDS, Mich., May 12.—The Corduroy Tire Co. reports April as the best month in its history in volume of sales and that the plant is now running to capacity, working 24 hours a day.

## S. A. E. and Other Bodies Will Write Safety Code for Brakes

**Want Effective Measure That Can Be Applied in All States of Union**

NEW YORK, May 12.—The Society of Automotive Engineers, the Bureau of Standards and the American Automobile Association have been asked by the American Engineering Standards Committee to prepare a safety code on automobile brakes and brake testing for national application.

Preliminary steps with this end in view already have been taken by the S. A. E., which has asked the National Automobile Chamber of Commerce for co-operation. The chamber in turn has referred the matter to the N. A. C. C. Traffic and Safety Planning Committee, of which George M. Graham is chairman. Approval by the car manufacturers will have a stimulating effect on the movement to standardize brake tests, it is felt.

If the work is undertaken, the code will be designed to fill the urgent need for a standard specification applicable to present-day conditions and susceptible of future modification, it being apparent from a study of both state and municipal regulations that no uniformity of requirements now exists. Furthermore, say those who are urging action, many of the present ordinances are entirely inadequate, and others are perhaps unfair. There is a probability that more ordinances relative to brake performance and inspection will be passed by states and municipalities and, if a satisfactory code can be formulated, it should accomplish much toward unifying laws that are being passed and toward obtaining not more laws but more reasonable ones.

Already one conference of the sponsors has been held at which matters relating to the requirements of such a code and the investigation necessary for formulating a standard specification were discussed.

### SHOW FRAME'S STRENGTH

KANSAS CITY, May 12.—The Flint Motor Company branch at Kansas City, A. W. Buck, manager, has used effectively the demonstration of the rigidity of the frame, through running a car around the streets on three wheels. Various means have been adopted to attract attention to this car; one of the most striking being the carrying of girls on the top of the car—which showed the strength of the permanent top.

### AUSTRALIA TAKING TRUCKS

SPRINGFIELD, O., May 12.—"Australia is opening up fine for motor trucks," said Karl Schreiber, superintendent of the Springfield works of The International Harvester Company. The local works, according to Mr. Schreiber, is now turning out an average of thirty-five motor trucks a day.



## BUSINESS NOTES

The Connonball Motor Bus Transportation Company, organized in Monmouth, Ill., with \$25,000 capital, proposes to establish bus lines between Kewanee, Ill., and Burlington, Ia., operating 30-passenger cars. W. W. McCullough, T. G. and T. R. McCullough and H. W. Stewart are the incorporators. W. W. McCullough and H. W. Stewart were formerly connected with the Rock Island Southern, an electric and steam interurban line.

The Federal Truck Company of Baltimore, 410-412 West North avenue, Baltimore, has been incorporated with \$100,000 capital stock to deal in motor trucks. The incorporators are Martin L. Pulcher, Edward P. Hammond, Frank L. Pierce, Chandler A. Rogers, Raymond W. Ruden, Hal H. Smith and Albert B. Ijams.

The Rhoads Auto Electric Co., Canton, Ohio, has been chartered with an authorized capital of \$10,000 to buy, sell and deal in storage batteries and other electrical devices. Incorporators are: Lester G. Smith, John L. Packer, Harold N. Seely, Walter A. Rhoads and J. E. Rhoads.

The Avenue Garage Co., Cleveland, has been incorporated with a capital of \$10,000 to operate and sell garages and automobile service stations. Incorporators are Harry Guffney Harold S. Goulson, M. A. Maroni, W. L. Gilmore and N. I. Young.

Hoadly Motor Incorporated, Cincinnati, has been chartered with a capital of \$50,000 to buy, sell and deal in autos, trucks and supplies. Incorporators are George Hoadly Jr., George Hoadly, C. A. Herrick, B. S. Oppenheimer and A. W. Goldsmith, Jr.

The Elgin, Ill., Piston Ring Company, former manufacturers of parts for motor vehicles at 300 Moseley street, that city, has certified to the secretary of state, of a dissolution of charter and its surrender. The company was organized Feb. 13, 1923 and capital stock fixed at \$6,000. F. E. Johnson was president and A. E. Harper secretary. For a short time, the business was profitable, but later, it was decided that it would be best to dissolve and the affairs of the company wound up.

The Southside Malleable Casting Company, Milwaukee, suppliers of malleable iron castings to the automotive trade, announces that on May 1 it opened new quarters for its district office in Detroit in the General Motors Building. This office is to serve the Michigan trade. It is in charge of Frederick S. Lawrie, formerly of Milwaukee.

Among the new firms in the automobile agency field formed the later part of April in the Southeast are the following: Calhoun Motor Co., St. Matthews, S. C., \$50,000 capital; Blacksher-Reese Motor Co., Mobile, Ala., \$14,000 capital; Winter Haven Motor Co., Winter Haven, Fla.; Ouchita Motors, Inc., Monroe, La.; \$25,000 capital; Morten-Murray Motor Co., Dallas, Tex., \$50,000 capital; Morgantown Auto Sales Co., Morgantown, W. Va., \$25,000 capital.

The Florida Motor Truck Corporation, of Winter Park, Fla., was organized and incorporated with \$50,000 capital the latter part of April, and has established as motor truck dealers at that place. Joseph L. Couch is president, and R. L. Murker, secretary and treasurer.

The General Tire & Supply Co. has been organized and incorporated at Augusta, Ga., with \$10,000 capital, and will handle the General tire line in that district, also a line of automotive accessories. Incorporators named are Alonzo P. and Clayton Boardman.

Purchase of the Indiana-Chattanooga Truck Co., 1250 Market street, Chattanooga, Tenn., Indiana truck dealers in that section, by Charles L. Hall and associates, has been announced, the name of the firm having been also changed to the Indiana Truck Co.

The Canadian Auto & Art Glass Co. Ltd., has been incorporated with a capitalization of \$100,000. Headquarters of the new company will be located in Montreal.

The Moline Body Co., Moline, Ill., announced production increases with prospects of force additions. The plant is at two-thirds capacity and men released two weeks ago have been recalled.

The final papers have been signed for completion of the deal by which the plant of the Comet Automobile Company, defunct, is transferred to the new L. P. Halladay Company, Decatur, Ill. Geo. W. Jaeger, of Chicago, the former president of the Comet company, was in Decatur to sign a quit claim deed in order to legalize the transfer.

Henry Brueps, Sr., Elgin, Ill., has broken ground for a new garage at 259 Grove avenue, that city, to cost \$20,000. The new structure will be two stories and will be made of brick and concrete. It is hoped to have the structure ready for occupancy by Sept. 1.

The Large Glare Protector Company, has been organized at Taylorville, Ill., to manufacture and distribute accessories for motor vehicles. Capital stock was fixed at \$20,000. A manufacturing plant will be opened at 305 West Main Street. The promoters include Charles Large and Ray Schalk. The latter is the well known catcher with the Chicago White Sox. The company will specialize in a new type of headlight protector which will serve as dimmer.

The Joslyn Automobile Company, established 15 years ago in Rock Island, and recently Nash distributors there, has filed petition in bankruptcy scheduling liabilities of \$78,345.54 and assets of \$15,713.99. Judson S. Joslyn is president of the concern and his attorneys have stated that about \$45,000 of real estate will be added to the assets scheduled.

The Duffield Motor Company, 2008 Forest Avenue, Des Moines, Iowa, will erect a \$40,000 two-story brick, steel and concrete office, storage and display building at 2016 Forest Avenue, it was announced this week. The building will be 55x120 feet and ready for occupancy June 15.

The Miller Rubber Company, of Akron, has moved its Chicago branch from 2329 South Michigan Avenue to space over Chicago Freight House No. 6 at 1965 West Pershing Place. The move was made, it is said, to realize the benefits of better railway facilities. C. R. Coombs is the Chicago branch manager and W. I. Fornof office manager.

The Trindl Co. 2917 S. Wabash avenue, Chicago, has opened a north side branch at 1611 Lawrence avenue. The new branch carries a stock of all parts manufactured and sold by the Trindl Co. such as piston pins, valves, pistons, fly-wheel starter gears, piston rings and silent timing gears, connecting rod and main bearings.

Clem H. Davis, Lowell R. Kraus and Hugo Miller, associated for many years with H. Scherer & Co. have formed a new corporation, Davis, Kraus & Miller, Inc., of Detroit to succeed to the commercial business of the Scherer company, maker of automobile trimmings. The new concern intends to carry on the business in the same location, 440 Jefferson avenue, East.

Receivership proceedings against the Steinmetz Electric Motor Car Corp., Baltimore, have been withdrawn and the first step of the new financing has been completed, the stockholders having subscribed to the \$60,000 minimum asked for of the \$300,000 three year 7 per cent gold coupon note issue. Funds from the sale of these notes were to be held in trust until the minimum of \$60,000 was reached. This amount having been subscribed, the money now is released for the corporation's use. It is planned to offer the balance of the issue to stockholders on the partial payment plan.

G. H. Kaiser and associates, of Knoxville, Tenn., have purchased the plant at Chattanooga of the Dubois Rubber & Tire Co., which has been idle for some months. The organization of a new company is immediately planned by Kaiser, following which the plant at Chattanooga will be reopened, and again devoted to the manufacture of tires and tubes.

The receiver's report of the sale of the real estate of the Comet Automobile Company to the L. P. Haladay Company, Decatur, Ill., for \$125,000, was filed in the Macon County Circuit court and approved. In addition, the receiver reported \$98,504 on hand and asked permission to pay out all but \$30,000 to unsecured creditors, the balance to be held for further order of the court. The amount to be distributed will pay about 75 per cent of the claims. The \$30,000 withheld temporarily, will ultimately pay the remaining 25 per cent of the claims.

The North Side Garage, 1316 North Thirteenth street, Sheboygan, Wis., owned and managed by Fred H. Poethig, has started work on the erection of a two-story addition, 34x146 feet, to its sales, service and garage building. The investment will be about \$25,000.

The Bankers' Trust Co. has been appointed receiver for the Motor Mercantile Co. of Salt Lake City, Utah, leading supply concern of that city. The liabilities are said to exceed \$250,000 of which \$170,000 is due and suits threatening. Assets are believed to amount to \$273,000.

The Shawnee Drive-In Service Co., Springfield, Ohio, has been incorporated with a capital of \$10,000 to buy, sell and deal in automobiles and accessories at both wholesale and retail. Incorporators are A. J. Brown, Frank X. Lothschoretz, John H. Fitzgerald, Jas. Cardingley and J. B. Bruggen.

The D. & C. Radiator, Fender and Body Repair Co., 2116 East 40th street, Cleveland, has been chartered with a capital of \$10,000 to buy, sell and deal in autos and accessories. Robert H. McKay, Maurice Singer, Jacob Singer, Charles B. Bolders and John F. Crowe are the incorporators.

## Too Great Variety in Spark Plugs, Assert Manufacturers

### Division of Simplified Practice Asked to Consider Reduction in Sizes and Shapes

WASHINGTON, May 12.—Convinced that needless waste in production and distribution of automobile spark plugs is caused by the present wide diversity in sizes and dimensions, a number of spark plug manufacturers have suggested to the Division of Simplified Practice of the Department of Commerce that a reduction of variety in spark plugs would be most desirable.

As a result, the Division has taken up the matter with the Society of Automotive Engineers, the National Automobile Chamber of Commerce, the Motor and Accessory Manufacturers Association, the Automotive Equipment Association, and the American Automobile Association, as representative of the several interests concerned with this problem.

The consensus of opinion shown by letters received by the Division from spark plug manufacturers is that the present variety could be appreciably reduced with resulting benefit to the spark plug manufacturer, the car builder, the accessory and supply dealer, and also to the car owner. Plugs, though now made in many different designs, are furnished in four principal diameters, no one of which is interchangeable with another. In addition to this diversity, each diameter is made in a number of different lengths, also in different sizes of "hex". The majority of those replying to the inquiry favor reduction, not only in these features, but also in the diameters. Some go so far as to recommend spark plugs be simplified to one size thread, one size of threaded shank, one length of plug body, and one size of hexagon. It is claimed this can be done without destroying the individuality of the different makes of spark plugs.

### BROADCAST MOTOR TALK

MOLINE, Ill., May 12.—More than 2,000,000 persons comprised the audience which one night recently heard H. C. Snow, chief engineer of the Velie Motors Corporation, Moline, Ill., give the first of his series of four talks on the automobile industry, the problems of the automobile manufacturer and the selection and care of a motor car. He traced the progress of the automobile industry from inception to the present day, giving constructive figures to show what this industry has come to mean to the country.

### 50 PER CENT MORE HORNS

NEWARK, N. J., May 12.—The Klaxon Co. reports that during the months of January, February and March of this year it shipped 128,000 more horns than during the corresponding quarter of 1923, an increase of 50 per cent for that period.



## CONCERNING MEN YOU KNOW

W. O. Rutherford, Vice-President of The B. F. Goodrich Rubber Company is on a swing through the South and as far as the Pacific Coast, holding sales conferences in all branch centers with the Company's sales representatives.

A. E. Tregenza, formerly sales manager of the Economy Fuse Manufacturing Co., Chicago, has been named as assistant to the president of the Chicago Fuse & Manufacturing Co. and will be in charge of commercial relations.

O. C. Halzelring, sales manager, was the author of a novel plan for distributing \$500 in bonuses to salesmen of the Southwest Nash Co. Nash distributors here for the sales of used cars during the month of April. A punchboard was prepared with 60 holes each filled with an order for currency ranging from \$1 to \$50 and each time a salesman sold a used car he punched the board and cashed the order.

Geo. C. McMullen, formerly manager of sales of the Industrial Bearings Division, becomes district manager of sales of the Timken Rubber Bearing Co. on the Pacific Coast, with headquarters at San Francisco, Cal. Harry H. Gildner, formerly in charge of the Chicago office of the Timken Roller Bearing Company, becomes manager of the Industrial Division, with headquarters at Canton, Ohio.

Walter B. Erwin, formerly vice-president of the H. L. Rackliff Co., Cleveland, automotive marketing counselors and more recently associated with Lon R. Smith and Fred S. Wilson in the firm of Smith & Wilson, Inc., of Indianapolis, has been appointed sales and advertising manager.

William G. Wall, formerly chief engineer of the National Motor Car & Vehicle Corp., has hung out his shingle as consulting engineer, with offices in the Merchant Bank Building, Indianapolis, where he will carry on automobile and industrial branches of mechanical engineering and development work. Mr. Wall has been in the industry since its start, and has been most prominent in the development of the Society of Automotive Engineers.

L. J. Belnap, president, and Maurice Olley, chief engineer, of Rolls-Royce of America, Inc., have returned from a visit to the Rolls-Royce plant in England for the purpose of making a close observation of comparative operations in the two establishments.

Word has been received from Mr. E. M. Lubbeck, general sales manager for the Apperson Automobile Company, of Kokomo, Indiana, that O. G. Gurnee has taken over his duties at the Apperson factory as assistant advertising manager.

Perry E. Bondy, formerly vice-president and manager of the Bondy Motor Sales Co., at Toledo, has joined the Woleben Motor Sales Co., as sales manager. Arthur Woleben is head of the Chevrolet agency. A new home for the company has been built near Monroe and Detroit avenue.

A circular from Schenectady advises that Francis C. Pratt vice-president in charge of engineering for the General Electric Co., has announced appointment of E. W. Allen as manager of the engineering department. Mr. Allen formerly was engineer and assistant manager of the company's Central District with headquarters in Chicago.

Percy Owen, Chief of the Automotive Division, U. S. Department of Commerce, will be one of the principal speakers before the Foreign Trade Conference, to be held under the auspices of the University of Detroit, on May 16. Mr. Owen will speak on "The World Markets for Automobiles."

J. A. Kraus, for the past 10 years advisory and chief engineer of the Garford Motor Truck Co., of Lima, Ohio, has severed his connection with that company.

E. C. Howard has been appointed to the execu-

tive staff of the Fisher Body Corp., according to an announcement made by President F. J. Fisher. Mr. Howard recently resigned as vice-president of the LaFayette Motor Co., with which he had been connected since his resignation from the Cadillac Motor Car Co., where he was for many years general sales manager.

J. A. Mellish, assistant general sales manager, Locomobile Co. of America, Flint motor division, spent a week at Kansas City recently, going later to the company's new branch at Minneapolis. Mr. Mellish will visit New Orleans to arrange for opening a branch there. The company will probably establish distribution facilities at Salt Lake City shortly, it is said, through a contract with a distributor.

C. J. Whiteacre, for 11 years connected with W. C. Durant, has been appointed chief engineer of the Flint Motor Co., of Flint, Mich. Mr. Whiteacre started with the Chevrolet Motor Co. in 1911, going to the Mason Motor Co. as assistant chief engineer, later returning to Chevrolet. Upon the taking over the plant of the Samson Tractor Co., by the Chevrolet company he became chief engineer, while for a number of years prior to his affiliation with the Flint company he held the position of consulting engineer for the General Motors Corp. at the central laboratories in Detroit.

Allen D. Billingshurst, formerly foreign representative of the Federal Motor Truck Co. and who later was associated with the Autocar Co. as manager of the Cleveland and Detroit branches, has resigned. He is making his home in Detroit, with no immediate plans for the future.

George C. McMullen, formerly manager of sales of the industrial bearings division of the Timken Roller Bearing Co., has become district manager of sales of the Timken interests on the Pacific Coast, with headquarters in San Francisco. Harry H. Gildner, formerly in charge of the Chicago office, becomes manager of the industrial division at Canton, Ohio.

F. H. Robb has been appointed superintendent of automotive service of the Westinghouse Electric & Manufacturing Co., succeeding M. B. Speer, who has associated himself with other interests. Mr. Robb has been with the Westinghouse company since 1919 and for the past four years has been district service supervising engineer in the Chicago territory. His new headquarters will be at Springfield, Mass.

Roger Birdsall, formerly connected with the Bureau of Standards at Washington, is the new sales engineer of the Racine Radiator Co., of Racine, Wis. In his new connection he will devote his attention to the special engineering of radiators and cooling systems.

M. E. Majors, former manager of the Indianapolis branch of the Yale Tire and Rubber Co., of New Haven, Conn., has been appointed manager of the tire department of the Frampton Company, St. Louis tire and accessory dealers. The officers of the Frampton Co., are the same as those of the Hudson-Frampton Automobile Co., Hudson and Essex dealers.

J. C. Graves formerly retail service manager of the Southwest Nash Co., Nash distributors in St. Louis, has been promoted to be wholesale service manager, filling the vacancy caused by the resignation of C. B. Magill who has opened a chicken ranch near De Soto, Mo. T. D. Clayton, formerly in charge of the parts department of Southwest Nash has been named retail service manager.

A. A. Woodruff, general sales manager for the Locomobile Co., was in Kansas City, recently, and called on some of the 35 Locomobile owners, selling two new cars. The company will soon make arrangements for retail sales in Kansas City, either with a factory branch, or with establishment of headquarters at the Flint distributing branch.

## Cleveland Chart Shows Fall and Rise of Motor Business

### Sales Dropped From October Until Last of February Then Began Steady Climb

CLEVELAND, May 12.—Peak sales of both used and new cars came in Cleveland in June of last year, according to a chart made by the Chamber of Commerce.

The chart shows that sales of cars declined from October last year until the last of February, and then in March they rose steadily. It also discloses that sales in January, February and March of this year were considerably in excess of those of the same period last year.

In the month of March this year sales of used cars approximated 5,600 and of new cars about 3,600, while in March of last year the figures were 4,000 used cars and 3,000 new cars. During the month of June last year 6,700 used cars were sold and 5,200 new cars. This is taken as evidence that the peak of the year's sales are coming in either May or June.

In January this year sales of used cars approximated 3,900 as compared to 2,800 in the same month last year, and sales of new cars in January this year amounted to 2,400, while last year the number was 1,500. In February this year the record is 3,800 used cars and 2,600 new cars as compared to 3,700 used and 2,000 new cars in the same month last year.

The estimates are based on transfers of ownership that are filed with the county clerk here.

### HOLD MOTOR AND RADIO SHOW

FAIRBURY, Ill., May 12.—Motor car and radio dealers of Fairbury gave their first annual show recently. Seven motor car dealers were represented, while a number of accessory and radio firms arranged some attractive exhibits. It is not often that a city as small as Fairbury attempts such an ambitious show, but the results more than justified the effort and expense.

### N. Y. PACKARD SALES HIGH

NEW YORK, May 12.—Sales of new cars in April at the New York branch of the Packard Motor Car Co. were 443 cars, valued at \$2,200,000, a new high record both as regards number of units and money value. This compares with 433 cars valued at \$1,900,000 in April of last year. President Lee J. Eastman reports that since January 1 his sales have exceeded the same period in 1923.

### CONFER WITH BANKERS

DECATUR, Ill., May 12.—Nearly 100 used car dealers and bankers in Decatur, Springfield, Lincoln and other central Illinois cities in this field held a business conference in the Decatur Y. M. C. A. Discussion of financial problems related to the used-car turn-in and brought on by the spring auto activities inspired the session.

### SALES LECTURES PLANNED

ST. LOUIS, Mo., May 12.—At a meeting of St. Louis Automobile salesmen, sponsored by the St. Louis Automobile Dealers' Association, and presided over by Robert E. Lee, manager of the association, George Cromwell Blower of New York, a sales educator, outlined his plan for a course of instruction for salesmen which would increase their efficiency. The course calls for five morning lectures of 90 minutes each.

### POLICE INSPECT ALL CARS

NEW YORK, May 12.—The annual inspection of automobiles of the Police Department is now on. Police are stopping every car on the streets, examining them as to the condition of brakes, and mechanical condition and also noting engine numbers in the hope of tracing stolen cars. Each car after examination, is tagged to avoid a repetition of the inspection.

## IN THE RETAIL FIELD

Sam C. Igou who has been a Moon dealer in St. Louis for many years, operating the Igou Motor Co., at 2918 North Grand boulevard, has established a branch called the Grand Motor Company at 1645 South Grand avenue. The manager of the branch is J. Spencer Walling and the sales manager John F. Doyle.

A call for and deliver repair service has been inaugurated by the North Side Nash Co., St. Louis Nash dealer. A customer desiring service telephones the company, a mechanic is sent to bring in the car and it is returned when the work is done. Also the company has added an extensive supply of Nash parts.

The Barker-Hurley Motor Company has been organized for exclusive representation of the Lincoln car in Kansas City, Mo. The company is composed of E. W. Barker, known in motor circles through his storage and service garage business, C. B. Hurley, formerly of the sales department of the Greenlease Motor Co., Cadillac distributors, and H. M. Stunz, investor in the new business. The company has temporary headquarters at 22nd and McGee streets. Its permanent home site will be in a building to be erected at 47th street and Mill Creek boulevard, adjacent to the Country Club Plaza garage operated by Mr. Barker and his associates in the garage business.

New Maxwell-Chrysler dealers: N. T. Enloe, Jr., Chico, Cal.; Pike-Norwood Motor Co., Auton, Texas; G. W. Black, Inc., Pueblo, Colo.; Landsdorf Motor Sales Co., Cleveland, Southern Motor Co., Haynesville, La.; Harry L. Newcomer, Brownsville, Pa.; Knightstown Sales Company, Knightstown, Ind.; Ments Motor Company, Laramie, Wyoming.

New Chrysler dealers: Santa Cruz Auto Sales Co., Santa Cruz, Cal.; Central Garage, Middletown, Ohio.

New Maxwell dealers: Commercial Auto Co., Winslow, Ariz.; Flick & Danielson, Agenda, Kans.

The Rickenbacker-Cleveland Co., 122 West Elm street, Urbana, Ill., has been incorporated with \$10,000 capital to handle Rickenbacker and Cleveland cars in that city. Herman L. Ascher, Glenn O. Scott and Clarence Smith are the incorporators.

The Fort Madison Auto Supply and Engine Co., Fort Madison, Iowa, will establish a Studebaker agency in Keokuk as a branch of its main office within a short time, E. E. Corsepius, manager of the firm announced. The company has handled the Studebaker in Fort Madison 15 years.

The Spiess Motor Sales Co., 244 East Wood street, Decatur, Ill., is making extensive improvements in its new Maxwell and Chrysler sales agency. B. N. Hansen formerly had the dealers license but sold it to John F. Spiess. A. B. Hollabird, who handled the Hansen agency, is retained as head of the sales organization.

Roll's Chevrolet Sales Co., Marshfield, Wis., has been organized by Amos Roll to act as Chevrolet distributor in Wood, Portage, Clark and Marathon counties. Headquarters have been established in the large building erected several years ago for the Stewart Storage Battery Co., now out of business. Storage for 200 cars is available.

The H. O. White Motors Co. has been organized at Kenosha, Wis., to act as Chrysler and Maxwell dealer for Kenosha county. It has opened headquarters in the large new building of the Long Motor Co., 464-468 Park street. The Long company will operate as a storage, repair and service concern, with paint and trim shop, automotive equipment, fuel and lubricants store, and furnish service to Chrysler and Maxwell owners as well as all other makes.

Paul V. Amick, Sacramento, Cal., announces his appointment as Nash and LaFayette dealer for the Sacramento territory which includes five counties. Amick formerly was sales manager for Frank Lauppe, former Nash dealer here. The Nash agency has been vacant for nearly a year. Permanent sales rooms have not yet been secured.

An open-air used car department with a garage building providing shelter, has been opened by the Ward Motor Car Co., St. Louis Chrysler, Chalmers and Maxwell distributors at 3408 Iowa avenue. As the new department is in the district known as the Cherokee Business District, the Ward Co. has joined the Cherokee Business Men's Association.

Kramer Motor Sales Company of 1165 Hudson boulevard, Bayonne, N. J., have taken on the sales of the Peerless six and eight cylinder motor cars.

The Weber Implement and Automobile Co., St. Louis Hupmobile distributor, has opened a tent show room for used cars at Manchester and Hope avenues in Maplewood, a suburb of St. Louis. Cyrus D. Robinson had charge of arranging the display of cars and George Drake and James Hogan are the salesmen attached to the department.

The Healy-Larson Motor Co., 441-443 Jackson street, Milwaukee, has been appointed distributor in Wisconsin and Upper Michigan of the Anderson Six.

Ray V. Flynn and Clarence Wolf, of Dubuque, Iowa, have taken over the Chevrolet agency in Belvidere, Ill. Both men are well known in Dubuque auto circles.

J. M. Lederer, of the J. M. Lederer Motor Car Co., Willys-Knight and Overland dealer in St. Louis, recently announced extension of his "service for a year for \$30" plan. Last year when the plan was put into operation for the first time it contemplated only servicing new cars bought from the Lederer Co. for one year, but the experiment's success decided Mr. Lederer to run it another year. In addition to the fact that the plan last year cost the company nothing, Mr. Lederer says it has high advertising value. Under the service contract the Lederer Co. agrees to perform all necessary service on an Overland or a Willys-Knight car bought from the Lederer Co. for a year for \$30 paid in advance. Now the same contract will be offered to owners for the second year.

A strong dealer organization is being built by the Cleveland Motor Sales Co., recently appointed Cleveland distributor in St. Louis, through the eastern portion of Missouri and southern Illinois. G. A. Morris is the company's traveling representative in southeast Missouri while A. J. O'Herne is handling southern Illinois. Some of the dealers recently established are: Pike & Galli, Johnston City, Ill.; Joseph Benbenek, Duquoin, Ill., and the Harry Wells Motor Co., Elkhville, Ill.

The Lambert-Graves Motor Co., Inc., Ford and Lincoln dealers in St. Louis, celebrated its first anniversary with a dinner party to its entire force at the Melbroune Hotel. Sam B. Lambert, president; Arthur Lambert, Sr., vice-president; C. E. Graves, general manager, and Adolph Moore, service manager, were the speakers. The company recently announced the plan of building a special Lincoln department and also is planning to erect a new building adjoining the present location at 4576 Manchester avenue.

New Columbia distributors and dealers: Closed Car Garage, Inc., North Bennington, Vt.; Columbia-Springfield Motor Company, Springfield, Mass.; C. S. Van Buskirk, 109 Bartlett Ave., Pittsfield, Mass.; Columbia Motor Sales of Rhode Island, Providence, R. I.; Columbia Motor Sales & Service Co. New Bedford, Mass.; New Haven Jordan Company, New Haven, Conn.; South Tamaqua Garage, Tamaqua, Penna.; W. J. Frisbie, Egg Harbor, N. J.; Lincoln Garage, Newburgh, N. J.; North Avenue Garage, Cranford, N. J.; South Hudson Garage, Bayonne, N. J.; Landon Garage, Mt. Vernon, N. Y.; Chester E. Groff, Lancaster, Pa.; Griffiths Garage, Mt. Holly, N. J.; Daniel E. Eagan, Pottsville, Penna.; Main Street Garage, Rahway, N. J.

Alvin Alberti is in charge of a new salesroom and service station established by The Smith Sauer Marmon Co. of Chicago at 1811 Humboldt Blvd.

F. J. Lane, who for some time has been in charge of the Detroit sales office of the Allyn-Zerk system, has been elected vice-president in charge of sales. E. V. Harkins was elected treasurer, succeeding F. W. Ford, who recently became general manager.

P. T. Rathbun and Co., Springfield, Ohio, have moved into their new quarters at 222 East Columbia street. The new building is considered one of the most modern in the city and it has splendid garage facilities as well as display rooms. The company handles Paige, Jewett and Gray motor cars. The garage department is 200 by 60 feet.

South Side Buick Co., St. Louis, won the fifth monthly prize awarded in the Buick Dealers sales contest which opened Dec. 16. The meeting at which the prize was awarded was held at Melbroune Hotel, presided over by J. Frank Hilderbrand, president of the South Side Buick. The final meeting under the contest will be held May 15 when the last monthly prize and the grand prize will be awarded. F. W. A. Vester attended the meeting and told of his experience in Europe, saying that there is no used car problem there. They allow very little for used cars and sell them cheaply, he said.

## Griffin Sees Nothing Wrong Fundamentally With Business

**President Brewer of M. and A. M. A. Urges Caution, However, in Placing Commitments**

NEW YORK, May 12.—Declaring that there is nothing fundamentally wrong with general business of the country as analyzed by the directors of the Motor and Accessory Manufacturers' Association at their recent monthly meeting President G. Brewer Griffin, in a message to members, advises caution in placing commitments and tells them to urge their customers to order at least 60 to 90 days in advance of their needs.

"The automotive business from an accessory manufacturer's standpoint shows little improvement since last month, but we believe the entire year will show an output of vehicles about in line with the estimates of the Motor and Accessory Manufacturers' Association members made at the beginning of the year (which was set at between three million and three million five hundred thousand vehicles), unless some now unforeseen developments materialize," says President Griffin.

"We are cautioning our members not to commit themselves for materials and parts beyond firm orders from their customers where parts of devices are in any sense special, or beyond 60 days stock in advance of safe estimated sales in any case with manufactured products, and to continue to urge their customers to indicate their needs definitely at least 60 or 90 days in advance to permit the accessory supplier to manufacture with economical certainty."

### LINCOLN MAKES RECORD

DETROIT, May 12.—All previous records for shipments were broken by Lincoln Motor Co. in the week of April 21 to 26, when a total of 228 were delivered to dealers. The last high week record was in October, 1923, since which time numerous changes have been under way at the plant to provide for increased capacity and to increase the number of operations within the plant.

### REPORT ERRONEOUS

NEW YORK, April 12.—Announcement that Dutee W. Flint is interested in the recently formed Pressed Metal Co. of Pawtucket, R. I., organized to manufacture Ford fenders, is in error. While the company has been formed by Darius Goff and associates, Mr. Flint has no connection whatsoever with the new concern.

### TO MAKE SPARK PLUGS

ATLANTA, May 12.—Early establishment of a plant to manufacture spark plugs of a new type, and other automotive accessories, is contemplated by the Aircool Spark Plug Co., chartered recently at Miami, Fla., with \$300,000 capital. P. S. Campbell is president.



# Crankcase Oil Capacities

## On Current 1924 Passenger Cars

MAKE & MODEL	Engine			Capacity in Quarts		MAKE & MODEL	Engine			Capacity in Quarts
	Make	Model	Number of Cylinders				Make	Model	Number of Cylinders	
American.....66	H-S.	91	6	7		Lafayette.....8	Own	8	8	7
Anderson.....41	Con.	7U	6	6		Lexington.....Concord	Ans.	M.	6	6
Anderson.....50	Con.	8R	6	6		Lexington.....MM	Ans.	F.	6	6
Apperson.....6	Fal.	T8000	6	6		Liberty.....10-D	Own	10-D	6	6
Apperson.....8	Own	8	8	8		Lincoln.....8	Own	8	8	10
Auburn.....6-63	Own	663	6	8		Locomobile.....Series 8	Own	8	6	7
Auburn.....6-43	Con.	7U	6	6						
Barley.....6-50	Con.	7U	6	6		McFarlan.....TV	Own	TV	6	6
Buick.....4	Own	4	4	4		Marmion.....34	Own	34	6	12
Buick.....6	Own	6	6	6		Maxwell.....25	Own	25	4	4
						Mercer.....6	Own	6	6	6
						Moon.....6-40	Con.	7U	6	6
						Moon.....6-58	Con.	8R	6	6
						Moon.....6	Con.	7U	6	6
Cadillac.....V-63	Own	V-63	8	7		Nash.....41	Own	41	4	6
Case.....X	Con.	8R	6	6		Nash.....691	Own	691	6	6
Case.....Y	Con.	6T	6	6		National.....BB	Own	BB	6	10
Chalmers.....Y	Own	Y	6	7						
Champion.....4	Lyc.	K	4	6		Oakland.....6-54	Own	6-54	6	4
Chandler.....6	Own	6	6	8		Oldsmobile.....30	Own	30	6	6
Chevrolet.....Superior	Own	Sup	4	4		Overland.....91-92	Own	91	4	6
Chrysler.....6	Own	6	6	6						
Cleveland.....42	Own	42	6	6		Packard.....126	Own	126	6	6
Climber.....4	H-S.		4	5		Packard.....136	Own	136	8	8
Climber.....6	H-S.		6	6		Paige.....6-70	Con.	Spec.	6	6
Cole.....1924	Nor.	311	8	5		Peerless.....66	Own	66	8	8
Columbia.....L-6	Con.	7U	6	6		Pierce-Arrow.....33	Own	33	6	10½
Columbia.....B-6	Con.	8R	6	6		Pilot.....6-56	H-S.	90	6	7
Cunningham.....V	Own	V	8	10		Premier.....6-D	Own	6-D	6	7
Crow-Elkhart.....K	Lyc.	K	4	4½						
						R & V Knight.....H	Own	H	6	10
Davis.....71	Con.	7U	6	6		Reo.....T-6	Own	T-6	6	7
Davis.....81	Con.	8R	6	6		Revere.....M	Mon.	M	4	6
Dodge Brothers.....1924	Own	4	4	5		Rickenbacker.....C	Own	C	6	7
Dort.....27	Fal.	DT8000	6	4		Roamer.....4-75E	Due	G1	4	5½
Dorris.....680	Own	680	6	8		Roamer.....6-54E	Con.	12XD	6	6
Duesenberg.....8	Own	8	8	6		Rollin.....4	Own	4	4	6
DuPont.....C	H-S.	90	6	7		Rolls-Royce.....40-50	Own	40-50	6	6
Durant.....A-22	Con.	Spec.	4	5						
						Sayers.....G-L	Con.	6J	6	5
Earl.....40	Own	40	4	6		Seneca.....50-51	Lyc.	CF	4	5
Elcar.....6-60	Con.	8R	6	6		Stanley.....740	Own	740	2	6
Elcar.....4-40	Lyc.	CF	4	6		Star.....4	Con.	Spec.	4	4
Elgin.....25	Fal.	T8000	6	5		Stanwood.....6	Con.	7R	6	6
Essex.....6	Own	6	6	4		Stearns-Knight.....4	Own	Kni	4	10
						Stearns-Knight.....6	Own	Kni	6	10
Flint.....55	Con.	Spec.	6	6		Stephens.....20-104	Own	20	6	9
Ford.....T	Own	T	4	4		Stevens-Duryea.....G	Own	G	6	12
Franklin.....10-B	Own	10-B	6	5		Studebaker.....L-6	Own		6	6
						Studebaker.....S-6	Own		6	6
Gardner.....5	Lyc.	Spec.	4	5		Studebaker.....B-6	Own		6	6
Gray.....N & O	Own	N	4	5		Stutz.....695	Own	695	6	7
						Stutz.....KLDH	Own	KLDH	4	12
H. C. S.....4	Wei	Spec.	4	6		Stutz.....690	Wei	690	6	7
H. C. S.....6	Own	6	6	10						
Hatfield.....6-55	H-S.	40	6	5		Templar.....6	Own	6	6	8
Haynes.....60	Own	60	6	7						
Hudson.....6	Own	6	6	7		Velie.....58	Own	58	6	6
Hupmobile.....R	Own	R	4	4						
						Westcott.....D-48	Con.	12X	6	6
Jewett.....6	Own	6	6	6		Westcott.....C-44	Con.	8R	6	6
Jordan.....MX	Con.	Spec.	6	7		Westcott.....60	Own	60	6	6
Jordan.....HL	Con.	Spec.	6	7		Wills Ste. Claire.....B-68	Own	B-68	8	7
						Willys-Knight.....64-67	Own	Kni	4	6
Kelsey.....G	Lyc.	CF	4	5		Winton.....40	Own	40	6	4
King.....K	Own	K	8	7						
Kissel.....55	Own	Spec.	6	8						

Ans—Ansted  
 Con—Continental  
 Due—Duesenberg  
 Fal—Falls  
 H-S—Herschell-Spillman

Lyc—Lycoming  
 Mon—Monson  
 Nor—Northway  
 Wei—Weidely



## Make and Model Employed in 1924 Passenger Cars. — For Info

MAKE AND MODEL	CARBURETOR			ELECTRICAL SYSTEM							
	Make	Model	Size Inches	IGNITION SYSTEM		GENERATOR AND STARTER			BATTERY		
				Make	Model	Make	Generator Model	Starter Model	Make	Model	Voltage & Amp. Hrs. Capacity
American	66	Str.	LB2.	1 1/4	A-K.	CC.	G&D.	605.	Wil.	SJR15.	6-06
Anderson	41	Zen.	T4X.	1	Wes.	809121.	Wes.	35ATI.	Wil.	SJR4.	6-111
Anderson	50	Zen.	UL5.	1 1/4	Rem.	366D.	Rem.	918-B.	Wil.	SJR4.	6-111
Apperson	6	Str.		1	Rem.		Rem.	917-L.	Pre.	613.	6-100
Apperson	8	Joh.	A.	1 1/4	Rem.	367C.	Bij.	1220.	Pre.	613.	6-104
Auburn	6-63	Str.	OE2.	2	Rem.	626H.	Rem.	917J.	Exi.	3XC15.	6-105
Auburn	6-43	Str.	OE.	1	Rem.	366N.	Rem.	922-A.	Exi.	3XC13.	6-90
Barley	6-50	Str.	O-1.	1	Del.	483.	Del.	257.	Pre.	611SHC.	6-80
Bay State	1-2	Str.	O-2.	1 1/4	Del.	256.	Del.	258.	Exi.	3x515.	6-105
Brewster	41-91	Zen.	Spec.	1 1/4	Bos.	74R.	USL.	Spec.	USL.		12-90
Buick	4	Mar.	Spec.	1 1/4	Del.	Spec.	Del.	Spec.	Exi.	13-X.	6-90
Buick	6	Mar.	Spec.	1 1/4	Del.	Spec.	Del.	Spec.	Exi.	15-X.	6-105
Cadillac	63	Own.	V-63.	2	Del.	Spec.	Del.	Spec.	Exi.	3LXRV15.	6-130
Case	X	Sew.	XX43.	1 1/4	Del.	525.	Del.	258.	Wil.	SJRG-4.	6-118
Case	Y	Ray.	G.	1 1/4	Del.	5251.	Del.	256.	Wil.	SJRG-5.	6-133
Chalmers	Y	Str.	O.	1	A-L.	IC4030-1.	A-L.	GL403.	Wes.	6-OB-13.	6-106
Chandler	6	Str.	OE2.	1 1/4	Bos.	T6158.	Bos.	T1033.	Pre.	613RHN.	6-105
Chevrolet	Superior	Hol.	720.	1	Rem.	366P.	Rem.	950B.	Exi.	XW-13.	6-90
		Zen.	T4XE.	1					Wil.		
Chrysler	6	Str.	OF-2.	1 1/4	Rem.	616-F.	Rem.	917-T.	Wes.	6-0-13.	6-105
Cleveland	42	Str.	OS1.	1	Bos.	T6190.	Bos.	1021.	Pre.	611RHN.	6-80
Cole	1924	Joh.	A.	1 1/4	Del.	153.	Del.	153.	Wil.	SJRN5.	6-125
Columbia	L6	Str.	LB1.	1	A-L.	GJ4005.	A-L.	4012.	USL.	CDX313X.	6-106
Columbia	B6	Str.	O-1.	1	A-L.	IG4012.	A-L.	GJ1025B.	Pre.	611RHN.	6-80
Courier		Str.	OS-1.	1	A-K.	CC.	Wes.		Wil.	SJR3.	6-80
Crawford	6-60	Zen.	U6B.	1 1/4	Bos.	BU6.	Wes.		Wil.	SJRG.	6-115
Cunningham	V4	Str.	O-3.	1 1/4	Del.		Del.	182.	Wil.	SJRN5.	6-120
Dagmar	6-60	Zen.	U6B.	1 1/4	Bos.	BU6.	Wes.		Wil.	SJRG.	6-115
Daniels	23-38	Str.		1 1/4	Del.	5212.	Del.	170.	Wil.	SJRN5.	6-140
Davis	81	Str.	LS2.	1 1/4	A-L.		A-L.		Wil.	SRN.	6-110
Davis	71	Str.	O3.	1	A-L.		A-L.		Wil.	SJR3.	6-80
Dodge	1924	Ste.	25.	1	N-E.	O-10004.	N-E.	3804.	Wil.	SJR26.	12-50
									Exi.		
Dorris	6-80	Str.	O3.	1 1/4	Bos.	AT6.	Wes.	760.	Wil.	SJRN5.	6-139
Dort	27	Car.	GB0.	1	Bos.	TM662.	Bos.	649.	USL.	3HBX5X.	6-90
Duesenberg	8	Str.	O3.	1 1/4	Del.	242.	Del.	242.	Wil.	SR5.	6-119
DuPont	C	Str.	H.	1 1/4	Wes.	250358.	Wes.	760.	Wes.	6-C-15.	6-115
Durant	A22	Til.	L1A.	1	A-L.	Spec.	A-L.	Spec.	USL.	3HBX5X.	6-92
Eicar	6-60	Str.	O2.	1 1/4	Del.	5256.	Del.	258.	Wil.	SJR-3.	6-100
Eicar	4-40	Zen.	T4X.	1	Del.	5261.	Del.	265.	Wil.	SW4.	6-100
Eicar	6-50	Str.	O2.	1	A-L.	164039.	A-L.	GD4007.	Wil.	SW4.	6-90
Elgin	25	Str.	OS1.	1	DeJ.	IA4000.	DeJ.	4001.	USL.	3CVX6Z.	6-115
Essex	6	Det.	Spe.	1	Bos.	T6200.	Bos.	1043.	Pre.	613.	6-85
Flint	50	Str.		1 1/4	A-L.		A-L.		USL.		6-120
Ford	T	Own.	T.	1 1/4	Own.	T.	Own.	T.	Own.	T.	6-80
		Hol.	G.	1					Exi.	3XC-13.	6-80
Fox	7F	Zen.	U.	1 1/4	Sci.	AM6.	Wes.	751.	Exi.	3XC-17-1.	6-120
Franklin	10B	Own.	10B.	1	K-A.	RA.	A-K.	5970.	Wil.	X17.	6-116
Gardner	5	Zen.	T4X.	1	Wes.	288761.	Wes.	331328.	Wil.	SJR3.	6-94
Gray	N&O	Sco.	O.	1	Wes.	SC.	Wes.	34ATI.	USL.	CDX311.	6-84
H. C. S.	6	Str.	O3.	1 1/4	Del.	5259.	Del.	258.	Wil.	SJR4.	6-
H.C.S.	4	Str.		1 1/4	Del.		Del.		Wil.	SJR4.	6-
Hanson	66	Mar.	M-1.	1 1/4	Del.		Del.	165.	Pre.	RHN13.	6-80
Hatfield	6-55	Str.	OS2.	1 1/4	Bos.	T682.	Bos.	1003.	Exi.	3XC.	6-100
Haynes	60	Ray.	M3.	1 1/4	Kin.	82.	L-N.	504G.	Pre.	SHC615.	6-125
Hudson	6	Ste.	Spe.	1 1/4	Bos.	S106.	Bos.	1238.	Exi.	3XC15-1.	6-105
Hupmobile	R	Str.	M.	1	A-K.	RA.	Wes.	35AT.	Wil.	SJRG-4.	6-117
Jewett	6	Ray.	M3.	1 1/4	Rem.		Wes.	913A.			6-105
Jordan	MX	Str.	O2.	1 1/4	Del.	5255.	Del.	234.	Wil.	XR15.	6-133
Jordan	H&L	Str.	O2.	1 1/4	Del.	5255.	Del.	234.	Wil.	XR15.	6-133
Kelsey	G	Zen.	T4X.	1	Bos.	TM.	Bos.	1041.	Wes.	6C13.	6-105
King	LL	Bal.	TV10.	1 1/4	A-K.	CA.	Wes.	35AT.	Pre.	615WHN.	6-120
Kissel	55	Str.	OS2.	1 1/4	Rem.	912B.	Rem.	912B.	Wil.	SJR4.	6-117
LaFayette	132	Joh.	B.	2	Del.	5221.	Del.	187.	Exi.	LXR15-2.	6-130
Lexington	Concord	Ray.	MR4.	1 1/4	Con.	18.	G&D.	647.	Wil.	SJR.	12-100
Lexington	MM	Ray.	MR4.	1 1/4	Con.	18.	G&D.	647.	Wil.		6-100
Liberty	10D	Str.	I-1.	1	Wag.		Wag.		Pre.	613SHC.	6-120
									USL.	CDX313.	
Lincoln	8	Str.	O3.	1 1/4	Del.	193.	Del.	193.	Exi.	3LXRV15-2.	6-135
Locomobile	8	Bal.	Spec.	1 1/4	Del.	Spec.	Wes.	787R.	Wes.	12-C-13.	12-105
McFarlan	SV	Ray.			Del.	Spec.	Del.	Spec.	Wil.	SJR6.	6-120
McFarlan	TV	Ray.	G5.	1 1/4	/Spl.	SS6-2.	Wes.	781.	Wil.	SJR6.	6-160
					Wes.	DN.					

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# Designation of Units

Information on Engine Data See pages 80 and 81

CLUTCH		GEARSET		UNIVERSAL JOINTS				REAR AXLE			FRONT AXLE		STEERING GEAR	
Make	Model	Make	Model	FRONT		REAR		Make	Model	Differential Make	Make	Model	Make	Model
				Make	Model	Make	Model							
B&B.	DX-10.	B-L.	30.	Har.		Har.		Sal.		Sal.			Lav.	
B&B.	DX-141.	Dur.	O-4700.	Goo.	Disc.	Goo.	Disc.	Sal.	C.	Sal.		C.	Gem.	L.
B&B.	DX-141.	Dur.	O-4700.	Goo.	Disc.	Goo.	Disc.	Sal.	A.	Sal.		A.	Gem.	L.
Roe.	CL.	Mec.	MU.	Thi.		Thi.		Col.	12000.	B-L.		1100.	Lav.	2100.
Own.	8.	Own.	8.	Thi.		Thi.		Own.	8.	Own.		8.	Own.	8.
B&B.	DX-10.	War.	T-64J.	Thi.		Thi.		Col.	12002.	B-L.		1115.	Ros.	C.
B&B.	DX-10.	War.	T-64J.	Uni.		Uni.		Col.	12001.	B-L.		1114.	Jac.	
B&B.	DX-10.	Ful.	F.	M&E.		M&E.		Col.	12000.	B-L.		1100.	Jac.	L1A178.
B&B.	DX-10.	Det.	KY.	Spi.	200 1/2.	Spi.	200 1/2.	Col.	32000.	B-L.		3100.	Gem.	L-3.
Own.	41.	Own.	41.	Own.	41.	Own.	41.	Own.	41.	Own.		41.	Own.	41.
Own.	34.	Own.	34.	Own.	34.	Own.	34.	Own.	34.	Own.		34.	Jac.	34.
Own.	41.	Own.	41.	Own.	41.	Non.		Own.	41.	Own.		41.	Jac.	41.
Own.	U63.	Own.	U63.	Spi.	Spec.	Spi.	Spec.	Own.	U63.	Own.		U63.	Own.	U63.
Own.	X.	Own.	X.	Sne.	V3867.	Sne.	V3867.	Col.	33004.	B-L.		3105.	Jac.	L-1A-100.
Own.	Y.	Own.	Y.	Sne.		Sne.		Col.	50051.	B-L.		50002.	Jac.	L-2A-189.
Mec.	10.	War.		Mec.		Mec.		Tim.	Spec.	Tim.		6.	Gem.	M0889.
B&B.	DX-10.	Own.	6.	Own.	6.	Own.	6.	Own.	6.	Own.		6.	Own.	6.
Own.	Sup.	Own.	Sup.	Own.	Sup.	Non.		Own.	Sup.	Own.		Sup.	Own.	Sup.
Own.	6.	Own.	6.	Uni.		Uni.		Own.	6.	Own.		6.	Jac.	
B&B.	DX-10.	Own.	42.	Mec.	4.	Mec.	4.	Own.	42.	Own.		42.	CAS.	1.
Nor.	311.	Nor.	311.	Spi.	428.	Spi.	431.	Col.	50000.	B-L.		5003.	Gem.	M.
B&B.	DX-10.	Dur.	O5000.	Spi.	228 1/2.	Spi.	231 1/2.	Tim.	5002.	Tim.		1000.	Gem.	460.
B&B.	DX-10.	Dur.	2500B.	Spi.	2 1/2.	Spi.	2 1/2.	Tim.	5152.	Tim.		1150.	Gem.	L.
B&B.	DX-10.	Mun.	T-25A.	Fle.	2 1/2.	Fle.		Col.	10000.	Col.		73F.	Lav.	2100.
B-L.	35.	B-L.	35.	Spi.		Non.		Tim.	5310.	Tim.		1220.	Lav.	
Own.	U4.	Own.	V4.	Sne.	3-8.	Sne.	3-8.	Tim.	5712.	Tim.		1320.	Gem.	K.
B-L.	35.	B-L.	35.	Spi.		Spi.		Tim.	3210.	Tim.		1220.	Lav.	
Own.	23.	Own.	23.	Spi.	428.	Spi.	428.	Tim.	5762.	Tim.		1320.	Gem.	K.
B&B.	DX-10.	War.	T-64A.	Pet.	5117.	Pet.		Tim.	5002.	Tim.		1150.	CAS.	H.
B&B.	DX-10.	War.	T-64A.	Pet.	230.	Pet.	474.	Tim.	5002.	Tim.		1000.	CAS.	H.
Own.	4.	Own.	4.	Non.		Non.		Own.	4.	Own.		4.	Own.	4.
Own.	6-80.	B-L.	30A.	Spi.	428.	Spi.	431.	Tim.	5512.	Own.		6-80.	Lav.	2100.
Det.	JA5001.	Own.	27.	The.	G-222.	The.	G-222.	Fli.	2KA80.	B-L.		2KA A.	Gem.	60.
Own.	8.	Own.	8.	Chi.	DISC.	Non.		Own.	8.	Own.		8.	Lav.	2100.
B-L.	10.	B-L.	30.	Spi.		Spi.		Col.	50000.	B-L.		5000.	Jac.	L2A82.
Own.	A-22.	War.	Spec.	Spi.	Spec.	Spi.	Spec.	Ad.	Spec.	Ad.		Spec.	War.	Spec.
B&B.	DX-10.	War.	T64J.	Har.	F300.	Har.		Sal.	A.	B-L.		6-60.	Gem.	L.
B&B.	DX-10.	War.	T64J.	Mec.	4.	Non.		Sal.	C.	B-L.		C.	CAS.	L.
B&B.	DX.	War.	T64J.	Mec.	4.	Mec.	4.	Sal.	C.			C.	Ros.	O.
B&B.	DX-72.	War.	CHM.	Sne.		Sne.		Col.	11015.	B-L.		503.	Ros.	C.
Own.	6.	Own.	6.	Spi.		Spi.		Own.	6.	Own.		6.	Own.	6.
Own.	50.	War.	Spec.	Spi.		Spi.		Ad.	Spec.	Ad.		Spec.	War.	Spec.
Own.	T.	Own.	T.	Own.	T.	Own.	T.	Own.	T.	Own.		T.	Own.	T.
B-L.	30A.	B-L.	30A.	Spi.		Non.		Tim.	5310.	Tim.		1220.	Ros.	XB.
M&E.	10.	Own.	10B.	Spi.		Spi.		Own.	10B.	Own.		10B.	Own.	10B.
B&B.	DX-138.	Mec.	MU.	Pet.	634.	Pet.	634.	Fli.	44EA10.	Fli.		44DA.	Dit.	TRC300.
Own.	N.	Det.	CN.	(Mec.)	N.	(Mec.)	N.	Tim.	O-500.	N-P.		O-100.	Own.	N.
				(Sne.)	O.	(Sne.)	O.							
B-L.	30A.	B-L.	30A.	Spi.		Non.		Own.	6.	B-L.		5028.	Gem.	M.
B-L.	30.	B-L.	30.	Spi.		Spi.		Own.	4.	Own.		5028.	Gem.	M.
B&B.	DX-10.	G-L.	573T.	Uni.		Non.		Tim.	5052.	Tim.		5150.	Gem.	42.
B&B.	DX-10.	Dur.	O4700.	Spi.	331 1/2.	Spi.	331 1/2.	Col.	12000.	B-L.		12000.	Gem.	M.
Own.	60.	Mec.	LU.	Thi.	60.	Thi.	60.	Own.	60.	Sta.		60.	Jac.	L2A.
Own.	6.	Own.	6.	Spi.		Spi.		Own.	6.	Own.		6.	Gem.	M.
Lon.	10.	Own.	R.	Uni.		Uni.		Own.	R.	B-L.		Own.	Jac.	L-1-A1.
Lon.	10.	War.	T64J.	Mec.	4.	Mec.	4.	Tim.	Spec.	Tim.		Spec.	Gem.	60.
Det.	N.	Det.	KY.	Thi.		Thi.		Tim.	5200.	Tim.		1160.	Gem.	M.
Det.	N.	Det.	KY.	Thi.		Thi.		Tim.	5200.	Tim.		1160.	Gem.	M.
B&B.	DX-1028.	W-M.	C5.	Spi.	231 1/2.	Spi.	228 1/2.	Sal.	1492E.	Sal.		1491E.	Lav.	2700.
Det.	LA.	Own.	LL.	Uni.		Uni.		Col.	50016.	B-L.		5000.	Jac.	L-3A-86.
B&B.	DX-1029.	War.	T64J.	Spi.		Spi.		Tim.	5140.	Tim.		1156.	Jac.	L-2A.
Own.	132.	Own.	132.	Own.	132.	Non.		Sta.	Spec.	Own.		132.	Own.	132.
Lon.	10.	War.	T60.	Sne.	T.	Sne.	T.	Sal.	Spec.	B-L.		Spec.	Ros.	
Lon.	SF.	War.	T60.	Sne.	T.	Sne.	T.	Sal.	Spec.	B-L.		Spec.	Ros.	
B&B.	DX-10.	Det.	DY.	Spi.		Spi.		Tim.		Tim.		Tim.	Gem.	
Own.	8.	Own.	8.	Spi.	Spec.	Non.		Tim.	Spec.	Tim.		Spec.	Own.	8.
Own.	8.	Own.	8.	Own.	8.	Own.	8.	Own.	8.	Own.		8.	Own.	8.
Lon.	10.	War.	T64J.					Uni.	400FH.	Sal.		Sal.	Ros.	
M&E.	12F.	B-L.	35.	Sne.		Pet.	400.	Tim.	5712.	Tim.		1320.	Ros.	E.

See next page for abbreviation code



## Make and Model Designations Employed in 1924 Passenger Cars.—For Information

MAKE AND MODEL	CARBURETOR			ELECTRICAL SYSTEM							
	Make	Model	Size Inches	IGNITION SYSTEM		GENERATOR AND STARTER			BATTERY		
				Make	Model	Make	Generator Model	Starter Model	Make	Model	Voltage & Amp. Hrs. Capacity
Marmon.....34	Str.	O3.	1½	Del.	Spec.	Del.	253.	254.	Pre.	617SHC.	6-170
Maxwell.....25	Ste.	Spe.	1	Rem.	369C.	Rem.	4914A.	712A.	Wes.	6-OB13.	6-106
Moon.....6-40	Str.	OE.	1	Del.	002128.	Del.	257.	240.	Exi.	3XC13-1.	6-85
Moon.....6-58	Str.	OE.	1½	Del.	5208.	Del.	256.	181.	Exi.	3XC15-1.	6-110
Moon.....6	Str.	OE.	1	Del.		Del.	257.	240.	Exi.	3XC13-1.	6-85
Nash.....6	Mar.	Spec.	1½	Del.	Spec.	Del.	Spec.	Spec.	Wil.	SJRN4.	6-100
Nash.....4	Mar.	568.	1½	Del.	2159.	Del.	269.	228.	Wil.	SJRN4.	6-117
National.....BB	Ray.	GP4.	1½	Del.	5211.	Wes.	760.	751.	Pre.	615RHN.	6-125
Oakland.....6-54	Str.	OE.	1	Rem.	616E.	Rem.	917K.	713B.	Pre.	RH613.	6-100
Oldsmobile.....30	Zen.	T4XF.	1	Del.	273.	Del.	273.	274.	Wil.	XW13.	6-80
Overland.....91 & 92	Til.	Spe.	¾	A-L.	IG.	A-L.	GP.	NG.	USL.	CDN311X.	6-80
Packard.....S6	Own.	S6.	1½	Del.	5249.	A-K.	5870.	6484.	(Pre.)	(617SHC.	6-100
Packard.....S8	Own.	S8.	1½	Del.	5260.	O-D.	CE.	DE.	(Wil.)	(SJR-6.	6-100
Paige.....6-70	Ray.	G4P.	1½	A-K.	RA.	Rem.	923A.	722A.	(Pre.)	(617SHC.	6-100
Peerless.....6	Joh.		1½	Del.	Spec.	Del.	Spec.	Spec.	Wes.	(SJR-6.	6-155
Peerless.....66	Bal.	DV17.	1½	Del.	5250.	Del.	S247.	M712.	Exi.	3XV.	6-120
Pierce-Arrow.....33	Own.	33.	2	Del.	Spec.	Del.	Spec.	Spec.	Exi.	3XV.	6-130
Pilot.....6-56	Til.			Wag.		Wag.			Wil.	SJRN6.	6-162
Premier.....6D	Str.	O3.	1½	Del.	2159.	Del.	195.	194.	Pre.	RHN613.	6-110
Premocar.....6-40	Str.	MD.	1	Bos.		Bos.			Pre.	613HC.	6-130
R & V Knight.....H	Str.	OC2.	1½	Del.		Del.			Exi.		6-80
Reo.....T6	Ray.	STR.	1½	A-L.	IG4005.	A-L.	1025.	400.	Wil.	SJR6.	6-153
Revere.....M	Str.	M4.	1½	N-E.	MRT.	N-E.	3929.	3581A.	Wil.	SJRN4.	6-111
Rickenbacker.....C	Str.	O2.	1½	Bos.	ZR4.	Wes.	781.	776.	Pre.	SEIG.	6-100
Roamer.....4-75E	Str.	O3.	1½	Bos.	T6148.	Bos.	1032.	133.	(USL.)	(3CVX6X.	6-108
Roamer.....6-54E	Str.	OC2.	1½	Bos.	ZR4.	Wes.	781R.	778.	(Pre.)	(613RHN.	6-117
Rollin.....4	Til.	O.	1	Spl.	649.	Wes.	S28564.	270526.	Pre.	613SHC.	6-117
Rolls-Royce.....40-50	Own.	4050.	1½	O-D.	Y.	O-D.	DES.	DES.	USL.		6-105
Sayers.....GL	Str.	O3.	1½	Bos.	ZR6.	Spec.	Spec.	Spec.	Exi.	6XX13-1.	12-90
Seneca.....50&51	Zen.	T4X.	1½	Del.	5208.	Del.	258.	200.	Wil.	SJRN5.	6-132
Star.....4	Til.	Spec.	1	A-L.	IG.	A-L.	4001.	1001.	Pre.	RHN6-11.	6-80
Stearns-Knight.....4	Sch.			A-L.	Spec.	A-L.	Spec.	Spec.	USL.	CD.	6-80
Stearns-Knight.....6	Sch.		1½	A-K.		A-L.			Exi.	6XC13-1.	12-90
Stephens.....20-104	Str.	OC2.	1½	A-K.		A-L.			Exi.	6XC13-1.	12-86
Sterling Knight.....B6	Str.	OS2.	1½	Del.	5257.	Del.	258.	262.	USL.	HDX313X.	6-116
Studebaker.....L6 EM	Str.	OS1.	1	Wes.	JN.	Wes.	56G2.	755.	USL.	6HVX4X.	12-70
Studebaker.....S6 EL	Str.	LS2.	1½	(Wag.)	9K97.	(Wag.)	M355.	S462.	Wil.	SJRN3.	6-90
Studebaker.....B6 EK	Bal.	SV14.	1½	(Rem.)	626.	(Rem.)	917A.	720C.			
Stutz.....695	Str.	O3.	1½	(Rem.)	626F.	(Rem.)	917B.	723A.	Wil.	SJR4.	6-111
Stutz.....KLDH	Str.	OP3.	1½	(Wag.)	15724.	(Wag.)	M338.	S400.			
Stutz.....690	Spec.	OC2.	1½	(Rem.)	626F.	(Rem.)	917A.	723A.	Wil.	SJR4.	6-111
Templar.....6	Til.			(Wag.)	K724.	(Wag.)	M338.	S400.			
Velie.....56&58	Str.	O21.	1	Rem.	626H.	Rem.	917J.	720J.	Wil.	SR5.	6-120
Washington.....C	Zen.	U5.	1½	Del.	3209.	Rem.	OF.	741B.	Wil.	SJRN5.	6-125
Westcott.....D48	Ray.	M.	1½	Rem.	Spec.	Rem.	Spec.	Spec.	Wil.		6-120
Westcott.....C44	Ray.	ST.	1½	Del.	5208.	Del.	243.	244.	Pre.		6-
Westcott.....60	Ray.	ST.	1½	A-K.	RA3.	Wes.	360O43.	7701.	Wil.	SJR3.	6-100
Wills Ste. Claire.....A&B68	Hol.	Own.	1½	Rem.	366H.	Bij.	L220.	ED160.	Exi.	3XC15-1.	6-100
Willys Knight.....64&67	Til.	Spec.	1½	Del.	301.	Del.	180.	179.	Wil.	SJRN4.	6-117
Winton.....40	Ray.	G4.	1½	Del.	453.	Del.	258.	181.	Wil.	SJRN.	6-117
				Del.	5255.	Del.	258.	278.	Wil.	XW15.	6-101
				Del.	Spec.	Del.	Spec.	Spec.	Wil.	SJR5.	6-140
				A-L.	Spec.	A-L.	Spec.	Spec.	(Wil.)		6-120
				Del.		Del.			(USL.)	HDN317X.	6-170
									Wil.	SJRN5044.	6-139

Ad—Adams  
A-K—Atwater-Kent  
A-L—Auto-Lite  
B&B—Borg & Beck  
B-L—Brown-Lipe  
Blo—Blood  
Bij—Bijur  
Bos—Bosch  
Bal—Ball & Ball  
Car—Carter  
Cle—Cleveland  
Cl—Climax  
Col—Columbia  
Con—Connecticut  
Del—Deleo  
DeJ—DeJon  
Det—Detroit  
Dit—Ditweiler  
Dur—Durstion

Dyn—Dyneto  
Exi—Exide  
Eat—Eaton  
Ful—Fuller  
Flc—Flexite  
Flt—Flint  
G&D—Gray & Davis  
Geo—Goodrich  
Gem—Gemmer  
G-L—Grant Lees  
Har—Hartford  
Hol—Holley  
Hoo—Hoosier  
Joh—Johnson  
Kin—Kingston  
Lav—Lavine  
Lon—Long  
L-N—Leece Neville  
Mar—Marvel

M&E—Merchant & Evans  
Mec—Mechanic  
Mun—Muncie  
Nor—Northway  
Non—None  
N-E—North-East  
N-P—New Process  
O-D—Owen Dyneto  
Pre—Prest-O-Lite  
Pet—Peters  
Pen—Penfield  
Per—Peru  
Ray—Rayfield  
Rem—Remy  
Roc—Rockford  
Ros—Ross  
Str—Stromberg  
Ste—Stewart  
Sco—Scoville

Spe—Special  
Spec—  
Sci—Scintilla  
Spi—Spicer  
Sne—Snead  
Sal—Salisbury  
Sta—Standard  
Scw—Schwartz  
Spl—Splitorf  
Til—Tillotson  
Thi—Thierner  
Tim—Timken  
Uni—Universal  
Wes—Westinghouse  
Wag—Wagner  
Wil—Willard  
War—Warner  
W-M—Willys-Morrow  
Zen—Zenith

# tion of Units—Continued mation on Engine Data See pages 80 and 81

CLUTCH		GEARSET		UNIVERSAL JOINTS				REAR AXLE			FRONT AXLE		STEERING GEAR	
Make	Model	Make	Model	FRONT		REAR		Make	Model	Differential Make	Make	Model	Make	Model
				Make	Model	Make	Model							
Ow.	34.	Ow.	34.	Spi.	331½	Non.		Ow.	34.	B-L.	Ow.	34.	Ow.	34.
Mer.	9.	Ow.	25.	Ow.	25.	Ow.	25.	Ow.	25.	Ow.	Ow.	25.	Ow.	25.
B&B.	DX-10.	War.	T64J.	Spi.	231½	Spi.	228½	Tim.	5010.	Tim.	Tim.	1012.	Gem.	60.
B&B.	DX-10.	B-L.	20.	Spi.	331½	Spi.	328½	Tim.	5142.	Tim.	Tim.	1159.	Gem.	L.
B&B.	DX-10.	War.	T64J.	Spi.	231½	Spi.	228½	Tim.	5010.	Tim.	Tim.	1012.	Gem.	60.
B&B.	DX-10.	Ow.	691.	Ow.	691.	Ow.	691.	Ow.	691.	Ow.	Ow.	691.	Gem.	L.
B&B.	DX-10.	Ow.	41.	Ow.	41.	Ow.	41.	Ow.	41.	Ow.	Ow.	41.	Gem.	60-1883.
B&B.	GX12.	B-L.	30.	Uni.	B.	Non.		Col.	50000.	B-L.	Col.	5000.	War.	S-130.
Hoo.	9.	Mun.	6-54.	Mec.		Mec.		Ow.	6-54.	B-L.	Ow.	6-54.	Jac.	L5A10.
B&B.	DX-1042.	Mun.	551.	Ow.	30.	Ow.	30.	Ow.	30.	B-L.	Ow.	30.	Mun.	551400.
B&B.	8.	Ow.	91.	Ow.	91.	Non.		Ow.	91.	Ow.	Ow.	91.	Ow.	91.
Ow.	S-6.	Ow.	S-6.	Spi.	300½	Spi.	Spec.	Ow.	S-6.	Ow.	Ow.	S-6.	Ow.	S-6.
Ow.	S-8.	Ow.	S-8.	Spi.	300½	Spi.	Spec.	Ow.	S-8.	Ow.	Ow.	S-8.	Ow.	S-8.
Lon.	12.	War.	T76.	Mec.	5.	Mec.	5.	Tim.	Spec.	Tim.	Tim.	1216C.	Gem.	80.
Ow.	6.	Ow.	6.	Spi.		Spi.		Tim.	Spec.	Tim.	Tim.	Spec.	Gem.	Spec.
Ow.	66.	Ow.	66.	Non.		Spi.		Tim.	5320.	Tim.	Tim.	1220.	Gem.	M.
Ow.	33.	Ow.	33.	Goo.	Spec.	Spi.	Spec.	Ow.	33.	Ow.	Ow.	33.	Ow.	33.
Hoo.	K.	Mun.		Blo.		Blo.		Col.		B-L.	Col.		Ros.	
B&B.	DAX.	Ow.	6D.	Spi.	Sta.	Spi.	Sta.	Tim.	5512.	Tim.	Tim.	1320.	Ow.	6D.
B&B.	DX-10.	Det.	LY.	Spi.		Spi.		Tim.		Tim.	Tim.		Det.	
B-L.	10.	B-L.	30.	Non.		Spi.		Tim.	5302.	B-L.	Tim.	1220.	Jac.	L2A70.
Ow.	T6.	Ow.	T6.	Ow.	T6.	Ow.	T6.	Ow.	T6.	Ow.	Ow.	T6.	Ow.	T6.
B-L.	35.	B-L.	354.	Spi.		Spi.		Sta.	3070.	Sta.	Sta.	3780.	Gem.	M.
Ow.	C.	Ow.	C.	Mec.		Mec.		Ow.	C.	B-L.	Ow.	C.	Gem.	M.
B-L.	35.	B-L.	409X.	M&E.		M&E.		Tim.	5310.	Tim.	Tim.	1220.	Jac.	1-2AB.
B&B.	DX-10.	Ful.	TU5.	M&E.		M&E.		Tim.	5310.	Tim.	Tim.	1220.	Jac.	1-2AB.
B&B.	9.	Mun.	T5.	Sne.		Non.		Sal.	Spec.	N-P.	Sal.	Spec.	Det.	F.
Ow.	40-50.	Ow.	40-50.	Ow.	40-50.	Ow.	40-50.	Ow.	40-50.	Ow.	Ow.	40-50.	Ow.	40-50.
B&B.	GX-12.	B-L.	30A.	Cle.	400.	Cle.	400.	Tim.	5712.	Tim.	Tim.	1319.	Ros.	E.
B&B.	DX-10.	G-L.	H20.	Uni.		Uni.		Pen.	3595.	B-L.	Pen.	3435.	Det.	
Ow.	4.	War.	Spec.	Spi.	Spec.	Spi.	Spec.	Tim.	Spec.	Ow.	Tim.	Spec.	War.	Spec.
Ow.	4.	Ow.	4.	Chi.		Chi.		Ow.	4.	Ow.	Ow.	4.	Ow.	4.
Ow.	6.	Ow.	6.	Chi.		Chi.		Ow.	6.	Ow.	Ow.	6.	Ow.	6.
B&B.	DX-10.	Mec.	LU.	Mec.	5.	Mec.	5.	Tim.	5310-5140.	Tim.	Tim.	1216-1161.	Gem.	M.
Ful.	F2.	Fv.	F2.	Chi.		Chi.		Tim.	5200.	Tim.	Tim.	1160.	Ros.	
Ow.	EM.	Ow.	EM.	The.		The.		Ow.	EM.	Ow.	Ow.	EM.	Ow.	EM.
Ow.	EL.	Ow.	EL.	Spi.		Spi.		Ow.	EL.	Ow.	Ow.	EL.	Ow.	EL.
Ow.	EK.	Ow.	EK.	Spi.		Spi.		Ow.	EK.	Ow.	Ow.	EK.	Ow.	EK.
B&B.	Spec.	War.	Spec.	Mec.	Spec.	Mec.	Spec.	Tim.	Spec.	Tim.	Tim.	Spec.	Gem.	Spec.
War.	K19A.	Ow.	KLDH.	Har.	N600.	Non.		Tim.	Spec.	Tim.	Sta.		Gem.	K.
B&B.	DX-10.	War.		Mec.		Mec.		Tim.	Spec.	Tim.	Tim.	Spec.	Gem.	
M&E.	10.	War.		Chi.		Chi.		Sal.		B-L.	Sal.			
Doo.	B.	Dur.	O4700.	Thi.		Tni.		Col.	11000.	B-L.	Col.	1000.	Gem.	L.
B&B.	DX-10.	War.	T60.	Blo.	B2.	Blo.		Col.	3000.	B-L.	Col.	3000.	Ros.	XA.
B&B.	DX-10.	B-L.	30.	Pet.	S-300.	Pet.	S-300.	Tim.	5302.	Tim.	Tim.	1220.	Gem.	L.
B&B.	DX-10.	War.	T64J.	Pet.	S-200.	Pet.	S-200.	Col.	33001.	B-L.	Col.	3101.	Gem.	L.
B&B.	DX-10.	War.	T64J.	Pet.	S-200.	Pet.	S-200.	Col.	33001.	B-L.	Col.	3103.	Gem.	L.
Ow.	68.	Ow.	68.	Mec.	5.	Mec.	5.	Eat.	Spec.	Ow.	Ow.	68.	Lav.	Spec.
Ow.	64.	Ow.	64.	Ow.	64.	Ow.	64.	Ow.	64.	Ow.	Eat.	64.	Ow.	64.
B-L.	30.	B-L.	30A.	Uni.	4400.	Uni.	4400.	Eat.	720R.	B-L.	Eat.	28.	Ow.	40.

Ad—Adams  
 A-K—Atwater-Kent  
 A-L—Auto-Lite  
 B&B—Borg & Beck  
 B-L—Brown-Lipe  
 Blo—Blood  
 Bij—Bijur  
 Bos—Bosch  
 Bal—Ball & Ball  
 Car—Carter  
 Cle—Cleveland  
 Chi—Climax  
 Col—Columbia  
 Con—Connecticut  
 Del—Deleo  
 DeJ—DeJon  
 Det—Detroit  
 Di—Ditweiler  
 Dur—Durstun

Dyn—Dyneto  
 Ezi—Exide  
 Eat—Eaton  
 Ful—Fuller  
 Fle—Flexite  
 Flt—Flint  
 G&D—Gray & Davis  
 Geo—Goodrich  
 Gem—Gemmer  
 G-L—Grant Lees  
 Har—Hartford  
 Hol—Holley  
 Hoo—Hoosier  
 Joh—Johnson  
 Kin—Kingston  
 Lav—Lavine  
 Lon—Long  
 L-N—Leece Neville  
 Mar—Marvel

M&E—Merchant & Evans  
 Mec—Mechanic  
 Mun—Muncie  
 Nor—Northway  
 Non—None  
 N-E—North-East  
 N-P—New Process  
 O-D—Owen Dyneto  
 Pre—Prest-O-Lite  
 Pet—Peters  
 Pen—Penfield  
 Per—Peru  
 Ray—Rayfield  
 Rem—Remy  
 Roc—Rockford  
 Ros—Ross  
 Str—Stromberg  
 Ste—Stewart  
 Sco—Scoville

Spe—(Special)  
 Spec—  
 Sci—Scintilla  
 Spi—Spicer  
 Sne—Snead  
 Sal—Salisbury  
 Sta—Standard  
 Schw—Schwartz  
 Spl—Spiltdorf  
 Til—Tillotson  
 Thi—Thierner  
 Tim—Timken  
 Uni—Universal  
 Wes—Westinghouse  
 Wag—Wagner  
 Will—Willard  
 War—Warner  
 W-M—Willys-Morrow  
 Zen—Zenith



# Chassis Replace

## 1924 Passeng

MAKE AND MODEL	RADIATOR HOSE				TUBING			FAN BELTS		CLUTCH DISKS			BRAKE LINING								
	Upper		Lower		Exhaust	Copper		Length	Width	Outside Diameter	Inside Diameter	Thickness	Service			Emergency					
	Length	Inside Diameter	Length	Inside Diameter		Gas	Oil						Number of Pieces	Length	Width	Thickness	Number of Pieces	Length	Width	Thickness	
American.....D-66	17	1½	7	1¼	2¼	¾	¾	33¾	1	9½	6¾	¾	2	43	2	¾	2	42	2	¾	
Anderson.....41	13½	1½	3	1¼	2	¾	¾	38	1	9½	6¾	¾	2	37	2	¾	1	22	2	¾	
Anderson.....50	10	1½	9½	1¼	2¼	¾	¾	32¾	1¼	9½	6¾	¾	2	43½	2	¾	1	22	2	¾	
Apperson.....6	14¼	2¼	14¼	2¼	2	¾	¾	40	¾	9½	6¾	¾	2	43¾	2	¾	2	39	1¾	¾	
Apperson.....8	12	3	16¾	2	1¾	¾	¾	40	¾	10¾	7¼	¾	2	48¾	2¼	¾	2	44¾	2	¾	
Auburn.....6-63	4¾	1½	10	1¼	2¼	¾	¾	35¾	¾	9½	6¾	¾	...	45	2	¾	..	24¾	2	¾	
Auburn.....6-43	12¾	1½	5	1¼	2	¾	¾	40¼	1	9½	6¾	¾	....	38¾	1¾	¾	..	24¾	2	¾	
Barley.....6-50	13	1½	3½	1¼	2	¾	¾	39¼	1	9½	6¾	¾	....	43¾	2	¾	....	39	1¾	¾	
Buick.....4	7	1¼	13	1¼	.....	.....	.....	29¾	1¼	7¾	5¾	.....	....	33¾	1¾	.....	....	35¾	1¾	.....	
Buick.....6	7	1¼	13	1¼	.....	.....	.....	29¾	1¼	7¾	5¾	.....	....	38¾	2	.....	....	40¾	1¾	.....	
Cadillac.....V-63	8	1¼	4¾	1¼	1¾	¾	.31	.....	.....	7¾	.....	.....	2	{ 54	{ 2¼	{ ¾	2	51	2¼	¾	
Case.....X	5	1¼	10¾	1¼	2¼	¾	¾	32¾	1¼	8½	6¼	¾	2	{ 54	{ 2¼	{ ¾	2	46¾	2¼	¾	
Case.....Y	5	1¼	9	1¼	2¼	¾	¾	44¾	¾	8½	6¼	¾	2	48	2¼	¾	2	46¾	2¼	¾	
Chalmers.....6	2¾	1½	10¾	1½	2¾	¾	¾	37¾	1¾	9	7½	¾	2	43¾	2	¾	2	24¾	2	¾	
Chandler.....6	6¾	1¾	7¾	1¾	2¼	¾	¾	45½	¾	9½	6¾	¾	2	20¾	2	¾	2	23¾	1¾	¾	
Chevrolet.....Superior	7¾	1¼	5¾	1¼	2½	¾	0	29¾	¾	12¾	11¾	¾	2	29¾	1½	¾	2	28¾	1¼	¾	
Chrysler.....6	4¾	1½	6¾	1¼	2	¾	¾	39¾	¾	7¾	5¾	.....	{ 4	{ 22¾	{ 1½	{ ¾	2	9¾	2¼	¾	
Cleveland.....42	4	1½	7	1½	2	¾	¾	42¾	¾	9½	6¾	¾	2	20¾	2	¾	1	21¾	1½	¾	
Cole.....1924	22½	1½	3¾	1½	2½	¾	¾	44	¾	9½	7½	¾	2	48	2½	¾	2	46¾	2¼	¾	
Columbia.....L & B-6	12½	1½	3¾	1¼	2	¾	¾	40¾	1	9½	6¾	¾	4	20¾	2	¾	1	22¼	2	¾	
Courier.....9	2¼	11	2¼	2	2	¾	¾	42	1	9½	6¾	¾	2	43¾	2	¾	2	39	1¾	¾	
Crawford.....6	1½	10	1½	2½	¾	¾	¾	46	¾	8½	6¼	¾	2	42	2½	¾	2	36	2	¾	
Cunningham.....V-4	5½	1¼	2¾	1¼	2¼	¾	¾	.....	.....	8½	6¼	¾	2	48	2½	¾	2	48	2½	¾	
Cunningham.....V-5	5½	1¼	2¾	1¼	2¼	¾	¾	.....	.....	8½	6¼	¾	2	48	3	¾	2	48	3	¾	
Dagmar.....6-70	6	1½	10	1½	2½	¾	¾	46	¾	8½	6¼	.....	2	42	2½	¾	2	36	2	¾	
Davis.....71	6	1¼	12	1½	.....	.....	.....	40	1	9½	6¾	¾	2	50	2	.....	....	22	2	.....	
Dodge.....1924	9	1½	7¼	1½	2	¾	¾	34¾	1	9	6¾	¾	4	19¼	2¼	¾	4	14¾	1¾	¾	
Dorris.....6-80	2¼	1½	6¼	1¼	2½	¾	¾	41¾	1¼	8½	6	¾	...	47¾	2¼	¾	...	46¾	2¼	¾	
Dort.....27	8¾	2½	12	2½	2	¾	¾	42	1¼	7½	5½	¾	2	35¾	1¾	¾	2	36	1¾	¾	
Duesenberg.....St-Eight	8	1½	.....	1½	2¾	¾	¾	33¼	¾	13	7¾	¾	8	14¾	2¼	¾	2	7¾	2¼	¾	
DuPont.....C	5¾	1½	4¾	1¼	2¼	¾	¾	40	1	9½	6¾	¾	2	47¼	2½	¾	2	47¼	2¼	¾	
Durant.....4	4¾	1¼	15	1¼	1¾	¾	¾	38¾	¾	8½	6¼	¾	...	37¾	2	¾	....	35¾	1¾	¾	
Earl.....40	5	1½	5	1½	.....	.....	.....	.....	.....	9½	6¾	¾	2	40¾	2	¾	2	21¾	2	¾	
Elcar.....6-60	5½	1¼	12½	1¼	2¼	¾	¾	33¾	1¼	9½	6¾	¾	2	43¾	2	¾	2	42	2	¾	
Elcar.....4-40	9	2¼	21	2¼	2¼	¾	¾	35½	1¼	9½	6¾	¾	2	37¾	2	¾	1	24¾	2	¾	
Elcar.....6-50	9	2¼	21	2¼	2¼	¾	¾	35½	1¼	9½	6¾	¾	2	37¾	2	¾	1	24¾	2	¾	
Elgin.....25	10¾	2¼	12	2¼	2	¾	¾	40	¾	9½	6¾	¾	8	17	1¾	¾	1	24¾	2	.....	
Essex.....6	14¾	2¼	5½	2¼	.....	.....	.....	.....	1	.....	.....	.....	40	1½	.....	.....	40	1½	.....		
Flint.....8	1½	12¾	1¼	2¼	¾	¾	¾	12¾	¾	.....	.....	.....	42¾	2	¾	....	40¾	1¾	¾		
Ford.....T	4	2	2¾	1¼	1¾	¾	¾	27	1½	0	0	0	3	23¾	1½	¾	0	0	0	0	
Franklin.....10B	0	0	0	0	1½	¾	¾	0	0	9½	6¾	¾	1	23¾	3½	¾	2	28	2¾	¾	
Gardner.....5	8½	2¼	15	2¼	2¼	¾	¾	36	1¼	9½	6¾	¾	2	34	2	¾	1	20¾	1¾	¾	
Gray.....O & N	9	2¼	2¾	1¾	1¾	¾	¾	34¾	1	9¾	7¾	.....	2	28	1¾	¾	1	19¾	1¾	¾	
H. C. S.....4 & 6	4	1¾	3¼	1¼	2¼	¾	¾	36¾	.....	8½	6¼	¾	4	20¾	2	¾	4	20¾	1½	¾	
Hanson.....70	9½	1¼	12½	1¼	2¼	¾	¾	30	1¼	9½	6¾	¾	2	41	1¾	¾	2	41	2	¾	
Hatfield.....6-55	10	1¾	9½	1½	.....	.....	.....	35	1½	9½	6¾	¾	2	47	2	¾	2	45	2	¾	
Haynes.....60	14¼	1¼	8¾	1½	2¾	¾	¾	37¾	1	9	6½	¾	2	42	2½	¾	1	24¾	2½	¾	
Hudson.....6	7	1½	5¾	1½	2¼	¾	¾	34¾	1	9½	7¾	.....	4	22¼	2½	¾	4	20¾	2½	¾	
Hupmobile.....R	5¾	2½	9½	2¼	1¾	¾	¾	24¾	¾	7¾	5¾	¾	2	23¾	2	¾	....	13¾	1¾	¾	
Jewett.....	.....	.....	.....	.....	.....	.....	.....	33¾	.....	7¾	5¾	¾	....	64	2	.....	....	21	2	.....	
Jordan.....MX, H, K, L	11	1¼	9½	1¼	2¼	¾	¾	44¾	¾	9½	6¾	.....	4	22¾	2	¾	2	44	1¾	¾	
King.....LL	6	2¼	3¾	1¾	2½	¾	¾	30	1½	9	5¾	¾	2	48	2½	¾	2	46¾	2¼	¾	
Kissel Custom.....45	8¾	1¼	10½	1¾	2¼	¾	¾	34¾	1	9½	6¾	¾	2	43¾	2	¾	2	43¾	2	¾	
Kissel.....55	8¾	1¼	10½	1¾	2¼	¾	¾	34¾	1	9½	6¾	¾	1	45¼	2	¾	1	42¼	2	¾	

# ment Data Table

## er Car Models

MAKE_AND_MODEL	RADIATOR HOSE				TUBING			FAN BELTS		CLUTCH DISKS			BRAKE LINING							
	Upper		Lower		Exhaust	Copper		Length	Width	Outside Diameter	Inside Diameter	Thickness	Number of Pieces	Service			Emergency			
	Length	Inside Diameter	Length	Inside Diameter		Gas	Oil							Length	Width	Thickness	Number of Pieces	Length	Width	Thickness
LaFayette.....132	6	1 1/4	Opt	1 1/4	1 1/4	3/8	3/8	.....	1 1/4	7 3/4	5 3/4	3/8	2	54	2 1/2	3/8	2	51 1/2	2 1/2	3/8
Lexington.....MM	6 1/2	1 1/4	4 1/2	1 1/4	2	3/8	3/4	42 3/4	3/8	7 3/4	5 3/4	3/8	2	45	2	3/8	.....	24 1/4	2	3/8
Liberty.....10D	6	2 1/4	13 3/4	2 1/4	2	3/8	3/8	40 3/2	1 1/4	9 3/4	6 3/4	3/8	4	20 3/8	2	3/8	1	22 1/2	2	3/8
Lincoln.....	16 1/4	1 3/4	11 1/4	1 3/4	2 1/2	3/8	3/8	33 1/4	1	8 3/4	6 3/4	.....	4	22 1/2	3	3/4	4	20 1/2	2 1/2	3/8
Locomobile.....8	2 3/4	1 3/8	5	1 3/8	2 3/4	3/8	3/2	54 1/8	3/4	11 1/8	8 5/8	.....	.....	97 1/4	3	3/8	.....	58	2 1/2	3/8
McFarlan.....TV	3 3/2	2	9 3/4	1 3/4	3	3/8	3/4	41	3/4	11 3/8	.....	.....	1	50 3/8	2 1/2	3/8	1	46 3/8	2 1/2	3/8
Marmon.....34	3 3/8	1 3/4	2 1/2	1 3/4	2 1/2	3/8	3/4	50 1/4	3/8	7 3/4	5 3/4	.....	2	54	2	3/8	2	47 3/8	1 3/4	3/8
Maxwell.....25	3 3/2	2 3/8	7 3/4	2 3/8	1 3/8	3/4	3/8	36 3/2	3/8	11 3/8	1 3/4	3/8	.....	34 3/8	1 3/8	3/8	4	24 3/8	2	3/8
Moon.....6-40	14	1 3/4	4	1 3/4	2	3/8	3/4	30	1	9 3/8	6 3/4	3/8	4	20 3/8	2	3/8	2	24 1/4	2	3/8
Moon.....6-50	8 3/2	1 3/4	10 3/2	1 3/4	2 1/4	3/8	3/4	33 1/2	1 1/4	9 3/8	6 3/4	3/8	4	20 3/8	2	3/8	2	24 1/4	2	3/8
Moon.....6-58	10	1 3/4	12	1 3/4	2 1/2	3/8	3/4	31	1 1/4	9 3/8	6 3/4	3/8	.....	41	1 3/4	3/8	2	42	1 3/2	3/8
Nash.....691	4 1/2	1 3/2	4	1 3/4	2	3/8	3/8	42 3/4	3/4	9 3/8	6 3/4	3/8	2	48 3/4	2 1/2	3/8	1	18 1/2	2 1/2	3/8
National.....BB	.....	1 3/4	13	1 3/2	2 1/2	3/8	3/4	38	1 1/4	11 3/4	8 3/4	3/8	2	48	2 1/2	3/8	2	46 3/8	2 1/4	3/8
Oakland.....6-54	8 3/2	1 3/4	8 3/2	1 3/4	2 1/4	3/4	3/8	33 3/8	1 1/2	9	5 1/4	.....	4	35	1 3/8	3/8	.....	14	2 3/4	3/8
Oldsmobile.....30	10 1/4	1 3/2	9 3/4	1 3/2	2	3/8	3/8	33 3/2	.644	9 3/8	6 3/4	3/8	2	16	1 1/2	3/8	1	18 3/8	2	3/8
Oldsmobile.....43-A	6 1/4	1 3/4	11	1 3/4	2	3/4	3/8	40 1/2	3/4	12 1/4	1 3/4	3/8	4	34 3/4	1 3/8	3/8	2	35 3/8	1 3/4	3/8
Overland.....91	.....	.....	.....	.....	2	.....	.....	.....	.....	7 3/4	5 3/8	3/8	2	31 3/2	1 3/4	3/8	4	15	1 1/4	3/8
Packard.....6	4 3/4	1 3/2	6 3/4	1 3/2	2 1/4	3/8	3/4	33 3/4	3/8	8	6	1 1/4	2	21 3/8	2	3/4	2	42 1/2	2	3/4
Packard.....8	4 3/4	1 3/2	6 3/4	1 3/2	2 1/4	3/8	3/4	34 1/2	3/8	8	6	1 1/4	2	21 3/8	2 1/2	3/4	4	13 3/4	2	3/4
Paige.....6-70	8 3/2	1 3/8	7	1 3/8	.....	.....	.....	32 3/8	1 3/4	9 3/4	7 3/4	3/8	2	49	2	3/8	2	48 3/2	2	3/8
Peerless.....66	7	1 3/2	10	1 3/4	1 3/8	3/8	3/8	.....	.....	8 3/8	6 3/4	3/8	.....	42 3/4	2 1/2	3/8	.....	44	2 1/2	3/8
Pierce Arrow.....33	3	2	14 1/4	1 3/2	2 3/8	3/8	3/8	42 3/8	3/8	4 3/8	2 3/8	3/8	2	51 3/8	3 3/4	3/8	4	10 3/8	2 3/4	3/8
Pilot.....6-45	10	1 3/2	6 3/4	1	2 3/4	3/8	3/8	32	3/4	.....	.....	3/8	2	44 3/4	2	3/8	2	41 3/4	1 3/4	3/8
Pilot.....6-50	9 3/4	1 3/2	6 3/4	1 3/4	2 3/4	3/8	3/8	33	1 3/4	.....	.....	3/8	2	44 3/4	2	3/8	2	41 3/4	1 3/4	3/8
Pilot.....6-56	4	1 3/2	7	1 3/4	2 3/4	3/8	3/8	33	1 3/4	8 3/8	5 3/4	3/8	2	55	2	3/8	2	49	1 3/4	3/8
Premier.....6-D	5 3/4	1 3/4	8 3/4	1 3/4	2	3/8	3/8	41 3/4	3/4	9 3/8	6 3/4	3/8	2	48	2 1/2	3/8	2	46 3/8	2 1/4	3/8
R & V Knight.....H	10 3/8	2 1/2	19	2 1/4	2 1/2	3/8	3/8	34 3/4	3/8	9 3/8	6 3/8	3/8	4	43 1/4	2 1/2	3/8	4	41 3/4	2 1/2	3/8
Reo.....T-6	12	1 3/2	8 3/4	1 3/4	2 1/2	3/4	3/4	37 3/4	3/8	6 3/8	5 3/4	3/8	2	45 3/8	2 1/2	3/8	2	40 3/8	2 3/4	3/8
Revere.....M	8	1 3/4	7	1 3/4	3	3/8	3/8	31	1 3/4	8 3/8	6 3/4	3/8	2	48	2 1/4	3/8	4	20	2 1/4	3/8
Rickenbacker.....C	9 3/4	1	14 3/4	1	2 1/4	3/8	3/8	31 1/2	3/8	9 3/8	7 3/8	.....	8	13 3/8	1 3/4	3/8	1	22 1/2	2	3/8
Roamer.....4-75-E	8	1 3/2	16	1 3/2	2 3/4	3/8	3/8	32	1 3/4	8 3/8	6 3/4	3/8	2	49 3/8	2 1/4	3/8	2	41	2	3/8
Roamer.....6-54-E	10	1 3/2	13	1 3/4	2 3/4	3/8	3/8	37 3/4	3/8	9 3/8	6 3/4	3/8	2	49 3/8	2 1/4	3/8	2	41	2 1/4	3/8
Rollin.....4	7 3/8	2 3/4	3 3/4	2 3/4	1 3/2	3/8	3/4	39 3/8	3/8	8 3/8	6 3/8	3/8	.....	.....	.....	.....	8	12 3/8	1 3/4	3/8
Rolls Royce.....40-50	2 1/2	1 1/2	5 1/2	1 1/2	.....	.....	.....	44	3/8	14 3/4	3 3/4	.....	.....	.....	.....	.....	.....	.....	.....	.....
Seneca.....50-51C	17	2 1/4	11	2 3/4	2 3/4	3/8	3/8	36 3/4	1 3/4	9 3/8	6 3/4	3/8	2	36 3/2	1 3/4	3/4	2	34 3/2	1 3/4	3/4
Star.....	4 3/8	1 3/4	3 3/4	1 3/4	1 3/4	3/4	3/4	37	1	.....	.....	.....	.....	31 3/8	1 3/8	3/8	.....	28 3/8	1 3/4	3/8
Stearns Knight.....4	6 3/4	1 3/2	9	1 3/8	2 3/4	3/8	3/4	36 3/4	1	7 3/4	5 3/4	3/8	2	43 3/4	2 1/2	3/8	.....	41 3/4	1 3/4	3/8
Stearns Knight.....6	6 3/2	1 3/2	9	1 3/8	2 3/2	3/8	3/4	36 3/4	1	7 3/4	5 3/4	3/8	2	46 3/4	2 1/2	3/8	4	18 3/4	1 3/2	3/8
Stephens.....10 & 20	11 3/4	2 1/4	11 3/4	2 1/4	2 1/4	3/8	3/8	34 3/8	3/8	9 3/8	6 3/4	3/8	2	44 3/4	2 1/4	3/8	2	23 3/4	2 1/4	3/8
Studebaker.....L-6	8	1	2 1/2	1	1 3/4	3/4	3/8	25 3/4	3/4	9	7 3/2	3/8	4	20	2	3/8	4	18	1 3/4	3/8
Studebaker.....S-6	10 1/2	1 3/2	8 3/4	1 3/2	2	3/4	3/8	41 3/4	1 3/4	12	8 3/8	3/8	4	21 1/2	2	3/8	4	19 3/8	1 3/4	3/8
Studebaker.....B-6	10 1/2	1 3/2	8 3/4	1 3/2	2	3/4	3/8	41 3/4	1 3/4	12	8 3/8	3/8	4	21 1/2	2	3/8	4	19 3/8	1 3/4	3/8
Stutz.....695	6 1/2	1 3/4	10	1 3/8	.....	.....	.....	36 3/8	3/8	10	9 3/8	3/8	.....	45 3/4	2	.....	.....	45 3/4	2 1/2	.....
Stutz.....690	6 1/2	1 3/4	10	1 3/8	.....	.....	.....	41 3/4	3/8	9 3/8	6 3/4	3/8	.....	43 3/4	2	.....	.....	44	1 3/4	.....
Stutz.....KLDH	8	2	2 1/2	1 3/4	3	3/8	3/4	36	3/8	8 3/8	6 3/8	3/8	4	20 3/8	2 1/4	3/8	4	16 1/2	1 3/4	3/8
Velie.....56 & 58	7	2 1/4	12 3/4	2 1/4	2	3/8	3/4	30 3/2	1	9 3/8	6 3/4	3/8	2	43 3/8	2	3/8	2	39	1 3/4	3/8
Westcott.....C44	7 3/2	1 3/4	12	1 3/4	2 1/4	3/4	3/4	36	1 3/4	9 3/8	6 3/4	3/8	2	48	2 1/2	3/8	1	22 1/2	2	3/8
Westcott.....D48	13	1 3/2	2 3/8	1 3/4	2 1/4	3/8	3/4	45	3/8	9 3/8	6 3/4	3/8	2	44 3/2	2 1/2	3/8	2	40	2 3/4	3/8
Westcott.....60	9	1 3/2	9 3/4	1 3/4	2 1/4	3/8	3/4	36	1 3/4	9 3/8	6 3/4	3/8	2	44	2	3/8	1	22 3/4	2	3/8
Wills Ste. Claire.....A & B68	5 3/4	2 1/4	5 3/4	2	2	3/8	3/4	0	0	12	8 3/2	3/8	2	41	2 1/4	3/8	2	38 3/4	1 3/4	3/8
Winton.....40	22 1/4	1 3/2	5 1/4	1 3/2	.....	.....	.....	36 3/8	3/8	8 3/8	6 3/4	.....	.....	53 3/8	2 1/2	.....	.....	49 1/4	2 1/2	.....



# Engine Data Table

## 1924 Passenger Cars

MAKE AND MODEL	ENGINE		Number of Cylinders Bore and Stroke (Inches)	Rated H. P. (N. A. C. C.)	VALVES			PISTONS		Rings	PISTON PINS		Connecting Rods		BEARINGS				OILING SYSTEM		COOLING SYSTEM				
	Make	Model			Arrangement	Camshaft Drive	Location of Non-Metallic Gear	Material	Length (Inches)		Weight (Ounces)	Number	Width (Inches)	Diameter and Length (Inches)	Bearing In	Center to Center Length (Inches)	Weight (Ounces)	Counter-balances Used?	Crankpin Diameter and Length (Inches)	Number of Bearings	Diameter and Length (Inches)	Diameter and Length (Inches)	Type	Pump Type	Water Circulation
American.....66	H-S.	40.....	6 3/4x5	25.35	L.	He.	Cam.	C.I.	3.50	32.0	3	3/16	.87x2.94	Rod.	11.00	56.0	No.	2.00x2.00	3	2.12x3.50	2.12x4.00	Sp Pr.	Ge.	Pu.	Cent.
Anderson.....41	Cont.	7U.....	6-3 1/2x4 1/2	23.44	L.	Ch.	None.	C.I.	3.25	27.0	3	3/16	.73x1.37	Pis.	8.25	32.0	No.	2.00x1.27	4	2.00x1.44	2.00x2.34	Pr Cs.	Ge.	Pu.	Cent.
Anderson.....50	Cont.	8R.....	6-3 1/2x4 1/2	27.34	L.	He.	Idl.	C.I.	4.06	35.0	3	3/16	.87x1.37	Rod.	10.50	52.0	No.	2.25x1.56	4	2.25x2.31	2.25x2.81	Pr Cs.	Ge.	Pu.	Cent.
Apperson.....6	Falls.	T8000...	6-3 1/2x4 1/2	23.44	L.	He.	Cam.	C.I.	3.50	28.0	3	3/16	.75x2.87	Pis.	8.12	32.5	No.	2.06x1.62	3	2.25x2.59	2.25x3.00	Pr Cs.	Ge.	TS.	None.
Apperson.....8	Own.		8-3 1/2x5	33.80	L.	He.	Cran.	C.I.	4.00	24.0	3	3/16	.93x2.87	Rod.	11.50	44.0	Yes	2.00x3.00	3	2.00x2.81	2.00x3.50	Fl Pr.	Ge.	TS.	None.
Auburn.....6-63	Weid.	Spec....	6-3 1/2x5	25.35	L.	Ch.	None.	C.I.	3.62	27.0	3	3/16	.87x3.06	Rod.	11.00	53.0	Yes	2.37x1.50	3	2.37x2.25	2.37x3.00	Pr Cs.	Ge.	Pu.	Cent.
Auburn.....6-43	Cont.	7U.....	6-3 1/2x4 1/2	23.44	L.	Ch.	None.	C.I.	3.25	27.0	3	3/16	.73x1.37	Pis.	8.25	32.0	No.	2.00x1.27	4	2.00x1.44	2.00x2.34	Pr Cs.	Ge.	Pu.	Cent.
Barley.....6-50	Cont.	7U.....	6-3 1/2x4 1/2	23.44	L.	Ch.	None.	C.I.	3.25	27.0	3	3/16	.73x1.37	Pis.	8.25	32.0	No.	2.00x1.27	4	2.00x1.44	2.00x2.34	Pr Cs.	Ge.	Pu.	Cent.
Bay State.....1-2	Cont.	8R.....	6-3 1/2x4 1/2	27.34	L.	He.	Idl.	C.I.	4.06	35.0	3	3/16	.87x1.37	Rod.	10.50	52.0	No.	2.25x1.56	4	2.25x2.31	2.25x2.81	Pr Cs.	Ge.	Pu.	Cent.
Brewster.....41-49	Own.	Kni.....	4 4 x5 1/2	25.60	S.	Ch.	None.	C.I.	5.25	59.0	4	1/4	1.25x3.75	Rod.	12.25	67.0	Yes	2.00x2.00	3	2.00x2.00	2.00x6.00	Fl Pr.	Ge.	Pu.	Cent.
Buick.....4	Own.	4.....	4-3 3/4x4 3/4	18.23	I.	He.	None.	C.I.			3	3/16	.75x	Rod.	12.00		No.	2.00x1.62	3	2.00x2.02	2.00x2.73	Sp Pr.	Ge.	Pu.	Cent.
Buick.....6	Own.	6.....	6-3 3/4x4 3/4	27.34	I.	He.	Cam.	C.I.			3	3/16	.87x2.94	Pis.	10.75		No.	2.25x1.75	4	2.38x2.62	2.38x2.81	Pr Cs.	Ge.	Pu.	Cent.
Cadillac.....63	Own.	63.....	8-3 1/2x5 1/2	31.25	L.	Ch.	None.	C.I.	3.29	25.5	3	3/16	.75x2.93	Pis.	12.50		Yes	2.37x2.50	3	2.37x2.87	2.37x4.00	Pr Cs.	Ge.	Pu.	Cent.
Case.....X	Cont.	8R.....	6-3 1/2x4 1/2	27.34	L.	He.	Idl.	C.I.	4.06	35.0	3	3/16	.87x1.37	Rod.	10.50	52.0	No.	2.25x1.56	4	2.25x2.31	2.25x2.81	Pr Cs.	Ge.	Pu.	Cent.
Case.....Y	Cont.	6T.....	6-3 1/2x5 1/2	31.54	L.	Ch.	None.	C.I.	4.37	41.0	3	3/16	1.12x1.75	Rod.	11.00	51.0	No.	2.37x1.87	4	2.37x2.41	2.37x3.06	Pr Cs.	Ge.	Pu.	Cent.
Chalmers.....6	Own.	6.....	6-3 1/2x4 1/2	25.35	L.	Ch.	None.	Al.	4.00		3	3/16	.31x2.87	Pis.	10.00		No.	2.25x1.50	3	2.18x2.44	2.31x3.44	Sp Pr.	Fi.	TS.	None.
Chandler.....6	Own.	6.....	6-3 1/2x5	29.40	L.	Ch.	None.	Al.	4.12		3	3/16	.96x2.93		10.75		No.	2.37x1.87	4	2.40x2.62	2.50x3.25	Pr Cs.	Ge.	Pu.	Cent.
Chevrolet.....Superior	Own.	4.....	4-3 1/2x4	21.70	I.	He.	None.	C.I.	3.62	38.0	3	3/16	.85x3.31	Pis.	7.38	27.0	No.	1.37x1.87	3	1.37x2.31	1.75x2.68	Sp Pr.	Ge.	Pu.	Cent.
Chrysler.....6	Own.	6.....	6-3 x4 3/4	21.60	L.	Ch.	None.	Al.	3.43	12.0	3	3/16	.75x2.68	Pis.	10.00	33.5	No.	1.87x1.37	7	1.87x1.87	1.87x2.43	Fl Pr.	Ge.	Pu.	Cent.
Cleveland.....42	Own.	42.....	6-3 1/2x4 1/2	22.50	I.	Ch.	None.	C.I.	3.50	28.8	3	3/16	.84x2.87	Rod.	9.50	38.5	No.	1.87x2.00	3	2.00x2.87	2.00x3.87	Sp Pr.	Ge.	Pu.	Cent.
Cole.....1924	Nort.	311.....	8-3 1/2x4 1/2	39.20	L.	He.	Cam.	Al.	4.37	28.0	4	3/16	.86x3.31	Rod.	9.50	31.0	Yes	2.12x2.50	3	2.00x3.37	2.12x3.94	Pr Cs.	Ge.	Pu.	Cent.
Columbia.....L6	Cont.	7U.....	6-3 1/2x4 1/2	23.44	L.	Ch.	None.	C.I.	3.25	27.0	3	3/16	.73x1.37	Pis.	8.25	32.0	No.	2.00x1.27	4	2.00x1.44	2.00x2.34	Pr Cs.	Ge.	Pu.	Cent.
Columbia.....B6	Cont.	8R.....	6-3 1/2x4 1/2	27.34	L.	He.	Idl.	C.I.	4.06	35.0	3	3/16	.87x1.37	Rod.	10.50	52.0	No.	2.25x1.56	4	2.25x2.31	2.25x2.81	Pr Cs.	Ge.	Pu.	Cent.
Courier.....Falls.	T8000...		6-3 1/2x4 1/2	23.44	L.	He.	Cam.	C.I.	3.50	28.0	3	3/16	.75x2.87	Pis.	8.12	32.5	No.	2.06x1.62	3	2.25x2.59	2.22x3.00	Sp Pr.	Ge.	TS.	None.
Crawford-Dagmar.....6-60	Cont.	6T.....	6-3 1/2x5 1/2	31.54	L.	Ch.	None.	C.I.	4.37	41.0	3	3/16	1.12x1.75	Rod.	11.00	51.0	No.	2.37x1.87	4	2.37x2.41	2.37x3.06	Pr Cs.	Ge.	Pu.	Cent.
Cunningham.....V	Own.	V.....	8-3 1/2x5	45.00	L.	He.	Cam.	C.I.	4.25	34.0	3	3/16	.94x3.23	Pis.	11.00	53.0	No.	2.25x3.50	3	2.25x3.00	2.25x4.00	Fl Pr.	Ge.	Pu.	Cent.
Daniels.....23-38	Own.	38.....	8-3 1/2x5 1/2	39.20	L.	He.	None.	C.I.		64.0	3	3/16			11.50		No.		3			Pr Cs.	Ge.	Pu.	Cent.
Davis.....71	Cont.	7U.....	6-3 1/2x4 1/2	23.44	L.	Ch.	None.	C.I.	3.25	27.0	3	3/16	.73x1.37	Pis.	8.25	32.0	No.	2.00x1.27	4	2.00x1.44	2.00x2.34	Pr Cs.	Ge.	Pu.	Cent.
Davis.....81	Cont.	8R.....	6-3 1/2x4 1/2	27.34	L.	He.	Idl.	C.I.	4.06	35.0	3	3/16	.87x1.37	Rod.	10.50	52.0	No.	2.25x1.56	4	2.25x2.31	2.25x2.81	Pr Cs.	Ge.	Pu.	Cent.
Dodge.....1924	Own.	4.....	4-3 1/2x4 1/2	24.03	L.	He.	None.	Al.	4.37	28.4	4	3/16	.81x3.62	Rod.	9.12	44.2	No.	1.62x1.87	3	1.87x2.45	1.87x2.58	Spla.	Ec.	Pu.	Cent.
Dorris.....6-80	Own.	6-80...	6-4 x5	38.40	I.	He.	C&A.	C.I.	5.25	48.0	3	3/16	1.22x3.62	Rod.	12.00	49.0	No.	2.25x2.00	7	2.25x2.00	2.25x2.75	Pr Cs.	Ge.	Pu.	Cent.
Dort.....27	Falls.	DT8000...	6-3 1/2x4 1/2	23.44	L.	He.	None.	C.I.	3.50	24.0	4	3/16	.74x2.87	Rod.	8.12	32.0	No.	2.06x1.62	3	2.25x2.59	2.22x3.00	Pr Cs.	Ge.	TS.	None.
Duesenberg.....St-8	Own.	8.....	8-2 1/2x5	26.45	I.	He.	None.	Al.	3.44	12.0	4	3/16	.75x2.56	Pis.	9.75	30.0	No.	2.25x1.75	3	2.36x2.25	2.36x2.87	Pr Cs.	Ge.	Pu.	Cent.
duPont.....C-H-S	Own.	90.....	6-3 1/2x5	29.40	L.	He.	Cam.	C.I.	3.50	3.60	3	3/16	.87x2.94	Rod.	11.00	56.0	No.	2.00x2.00	3	2.12x3.50	2.12x5.00	Sp Pr.	Ge.	Pu.	Cent.
Durant.....A22	Cont.	Spec....	4-3 1/2x4 1/2	24.03	I.	He.	None.	C.I.			3	3/16			8.00		No.		3			Pr Cs.	Ge.	Pu.	Cent.
Elcar.....6-60	Cont.	8R.....	6-3 1/2x4 1/2	27.34	L.	He.	Idl.	C.I.	4.06	35.0	3	3/16	.87x1.37	Rod.	10.50	52.0	No.	2.25x1.56	4	2.25x2.31	2.25x2.81	Pr Cs.	Ge.	Pu.	Cent.
Elcar.....4-40	Lyc.	CF.....	4-3 1/2x5	21.03	L.	He.	Cran.	Al*	4.12	26.0	3	3/16	1.12x2.90	Flo.	12.00	50.0	No.	2.12x1.81	5	2.12x2.62	2.12x3.62	Pr Cs.	Ge.	TS.	None.
Elcar.....6-50	Cont.	7U.....	6-3 1/2x4 1/2	23.44	L.	Ch.	None.	C.I.	3.25	27.0	3	3/16	.73x1.37	Pis.	8.25	32.0	No.	2.00x1.27	4	2.00x1.44	2.00x2.34	Pr Cs.	Ge.	Pu.	Cent.
Elgin.....25	Falls.	T8000...	6-3 1/2x4 1/2	23.44	L.	He.	Cam.	C.I.	3.50	28.0	4	3/16	.75x2.87	Pis.	8.12	32.5	No.	2.06x1.62	3	2.25x2.59	2.22x3.00	Pr Cs.	Ge.	TS.	None.
Essex.....6	Own.	6.....	6-2 1/2x4	16.54	L.	Ch.	None.	Al.	3.00		3	3/16	.75x2.00	Flo.	8.50		No.	1.81x1.25	7	2.00x1.00	1.50x .93	Spla.	Fi.	TS.	None.
Flint.....Cont.	Spec.		6-3 1/2x5	27.34	L.	Ch.	None.	C.I.		28.0	3	3/16			10.50		No.	2.00x1.50	3	2.00x2.26	2.00x2.93	Pr Cs.	Ge.	Pu.	Cent.
Ford.....T	Own.	T.....	4-3 1/2x5	22.50	L.	He.	None.	C.I.	3.81	34.0	3	3/16	.74x3.50	Pis.	7.00	20.5	No.	1.25x2.00	3	1.25x2.00	1.25x3.12	Spla.	No.	TS.	None.
Fox.....7F	Own.	7F.....	6-3 1/2x5	27.34	L.	Ch.	None.	Al.		18.0	3	3/16	.75x	Rod.	10.00	49.0	No.	1.62x	7	2.50x	2.50x	Sp Pr.	Ge.	No.	None.
Franklin.....10B	Own.	10B....	6-3 1/2x4	25.35	I.	Ch.	None.	Al.	3.84	24.0	4	3/16	.87x2.87	Pis.	8.00	23.0	No.	2.00x1.68	7	2.00x2.34	2.00x2.68	Sp Pr.	Ge.	No.	None.
Gardner.....5	Lyc.	CE.....	4-3 1/2x5	21.76	L.	He.	Cran.	Al.	4.12	43.0	4	3/16	1.12x3.31	Pis.	12.00	50.0	No.	2.12x1.81	5	2.12x2.62	2.12x3.62	Pr Cs.	Ge.	TS.	None.
Gray.....N&O	Own.		4-3 1/2x4	21.03	L.	He.	None.	C.I.	3.62	35.0	3	3/16	.74x3.25	Pis.											

# Engine Data Table

## 1924 Passenger Cars

MAKE AND MODEL	ENGINE		Number of Cylinders Bore and Stroke (Inches)	Rated H. P. (N. A. C. C.)	VALVES			PISTONS		Rings	PISTON PINS		Connect- ing Rods		BEARINGS					OILING SYSTEM		COOLING SYSTEM			
	Make	Model			Arrangement	Camshaft Drive	Location of Non-Metallic Gear	Material	Length (Inches)		Weight (Ounces)	Number	Width (Inches)	Diameter and Length (Inches)	Bearing In	Center to Center Length (Inches)	Weight (Ounces)	Counter-balances Used?	Crankpin Diameter and Length (Inches)	Number of Bearings	Diameter and Length (Inches)	Diameter and Length (Inches)	Type	Pump Type	Water Circulation
LaFayette.....132	Ow.	132	8-3 1/4x5 1/4	33.80	L...	Ch...	None	C.I.	3.75	25.0	4	3/8	.75x3.02	Rod...	12.62	34.3	No.	2.00x2.25	5	2.25x2.50	2.25x3.12	Pr Ca.	Ge.	Pu.	Cent.
Lexington.....Concord	Anst.	M.	6-3 1/4x4 1/2	26.34	I...	Ch...	None	C.I.	3.45	21.6	2	3/8	1.00x3.00	Rod...	8.50	No.	2.25x1.50	3	1.75x2.50	2.37x3.37	Fl Pr.	Ge.	Pu.	Cent.	
Lexington.....MM	Anst.	C.	6-3 1/4x4 1/2	25.35	I...	Ch...	None	C.I.	3.45	21.6	2	3/8	1.00x3.00	Rod...	8.50	No.	2.25x1.50	3	1.75x2.50	2.37x3.37	Fl Pr.	Ge.	Pu.	Cent.	
Liberty.....10D	Ow.	10D	6-3 1/4x5	23.44	L...	He...	None	C.I.	3.75	18.5	3	3/8	.87x3.12	Rod...	12.50	66.08	No.	2.00x2.50	5	2.00x1.75	2.00x3.50	Pr Ca.	Ge.	Pu.	Cent.
Lincoln.....	Ow.	8	8-3 1/4x5	36.45	L...	Ch...	None	Al.	3.75	18.5	3	3/8	.87x3.12	Rod...	12.50	66.08	No.	2.00x2.50	5	2.00x1.75	2.00x3.50	Pr Ca.	Ge.	Pu.	Cent.
Locomobile.....	Ow.	8	6-4 1/2x5 1/2	48.60	T...	He...	Cam.	C.I.	5.50	...	3	3/4	1.12x4.25	Rod...	12.00	No.	2.25x2.00	7	2.50x2.87	2.50x3.48	Sp Pr.	Ge.	Pu.	Cent.	
McFarlan.....SV	Wisc.	Y.	6-3 1/4x5	27.34	L...	Ch...	None	Al.	...	...	3	3/8	1.02x	...	12.00	Yes.	2.50x1.50	3	2.50x2.12	2.50x2.75	Fl Pr.	Ge.	Pu.	Cent.	
McFarlan.....TV	Ow.	TV	6-4 1/2x6	48.60	T...	He...	None	Al.	6.25	34.0	3	3/8	1.25x3.94	Flo...	12.00	94.0	No.	2.25x2.25	4	2.37x3.00	2.37x3.25	Fl Pr.	Ge.	Pu.	Cent.
Marmont.....	Ow.	34	6-3 1/4x5 1/2	33.75	L...	He...	Cam.	Al*	4.68	50.0	3	3/8	1.18x3.25	Flo...	10.25	72.2	No.	2.56x2.00	3	2.74x2.25	2.74x3.75	Fl Pr.	Ge.	Pu.	Cent.
Maxwell.....25	Ow.	25	4-3 1/4x4 1/2	21.03	L...	He...	Cran.	Al.	3.75	...	3	3/8	.75x3.00	Rod...	7.87	No.	1.87x1.50	3	1.87x2.40	1.87x2.81	Sp Pr.	Ge.	Pu.	Cent.	
Moon.....6-40	Cont.	7U	6-3 1/4x4 1/2	23.44	L...	Ch...	None	C.I.	3.25	27.0	3	3/8	.73x1.37	Pis...	8.25	32.0	No.	2.00x1.27	4	2.00x1.44	2.00x2.34	Pr Ca.	Ge.	Pu.	Cent.
Moon.....6-58	Cont.	8R	6-3 1/4x4 1/2	27.34	L...	He...	Idl.	C.I.	4.06	35.0	3	3/8	.87x1.37	Rod...	10.50	52.0	No.	2.25x1.56	4	2.25x2.31	2.25x2.81	Pr Ca.	Ge.	Pu.	Cent.
Moon.....Six	Cont.	Spec.	6-3 1/4x4 1/2	23.44	L...	Ch...	None	C.I.	3.25	27.0	3	3/8	.73x1.37	Pis...	8.25	32.0	No.	2.00x1.27	4	2.00x1.44	2.00x2.34	Pr Ca.	Ge.	Pu.	Cent.
Nash.....6	Ow.	6	6-3 1/4x5	25.35	L...	He...	Cran.	C.I.	4.00	36.5	3	3/8	.94x3.00	...	10.00	52.5	No.	2.25x2.25	3	2.25x2.75	2.25x3.25	Sp Pr.	Ge.	Pu.	Vane.
Nash.....4	Ow.	4	4-3 1/4x5	18.23	L...	He...	Cran.	S.S.	3.50	34.7	3	3/8	.93x2.91	Rod...	11.50	56.0	Yes.	2.50x2.25	2	2.25x2.75	2.25x3.31	Sp Pr.	Ge.	Pu.	Vane.
National.....BB	Ow.	BB	6-3 1/4x5 1/2	29.40	I...	Ch...	None	S.S.	4.50	46.0	3	3/8	1.09x3.06	Pis...	11.50	68.0	No.	2.50x2.12	3	2.50x3.28	2.50x3.84	Pr Ca.	Ge.	Pu.	Cent.
Noma.....C4	Cont.	8R	6-3 1/4x4 1/2	27.34	L...	He...	Idl.	C.I.	4.06	35.0	3	3/8	.87x1.37	Rod...	10.50	52.0	No.	2.25x1.56	4	2.25x2.31	2.25x2.81	Pr Ca.	Ge.	Pu.	Cent.
Oakland.....6-54	Ow.	6-54	6-2 1/2x4 1/2	18.99	L...	Ch...	None	Al.	3.44	13.2	2	1/8	.75x2.37	Flo...	8.85	27.5	No.	1.87x1.50	3	2.00x2.00	2.12x2.18	Pr Ca.	Ge.	Pu.	Cent.
Oldsmobile.....30	Ow.	30	6-2 1/2x4 1/2	18.15	L...	He...	None	C.I.	3.25	21.0	3	3/8	.85x2.28	Flo...	8.50	26.5	No.	1.87x1.50	3	2.00x2.68	2.12x2.18	Pr Ca.	Ge.	Pu.	Vane.
Overland.....91-92	Ow.	91	4-3 1/4x4	19.60	L...	He...	None	C.I.	...	...	3	3/8	...	...	...	No.	...	...	...	...	Spl.	No.	TS.	None.	
Packard.....S6	Ow.	S-6	6-3 1/4x5	27.34	L...	Ch...	None	C.I.	3.38	26.0	4	1/8	.75x3.12	Rod...	10.00	37.0	No.	1.75x1.50	7	1.87x2.56	1.87x2.50	Pr Ca.	Ge.	Pu.	Cent.
Packard.....S8	Ow.	S-8	8-3 1/4x5	36.45	L...	Ch...	None	C.I.	3.38	26.0	4	1/8	.87x2.92	Rod...	10.00	37.0	No.	2.12x1.50	9	2.37x2.93	2.37x2.50	Pr Ca.	Ge.	Pu.	Cent.
Paige.....6-70	Cont.	Spec.	6-3 1/4x5	33.75	L...	Ch...	None	C.I.	4.50	48.0	3	3/8	1.25x3.34	Rod...	11.00	65.0	No.	2.37x1.87	4	2.37x3.18	2.37x3.34	Pr Ca.	Ge.	Pu.	Cent.
Peerless.....6	Ow.	6	6-3 1/4x5	29.40	L...	Ch...	None	...	...	...	3	3/8	.75x	...	10.00	...	...	...	...	...	...	...	...	...	
Peerless.....66	Ow.	66	6-3 1/4x5	33.80	L...	He...	Cam.	C.I.	3.25	...	3	3/8	.87x3.00	Flo...	11.00	...	Yes.	.87x2.00	3	2.25x2.79	2.25x2.64	Pr Ca.	Ge.	Pu.	Cent.
Pierce-Arrow.....33	Ow.	33	6-4 x5 1/2	38.40	T...	He...	None	C.I.	...	...	3	3/8	1.06x	Flo...	...	...	No.	...	7	...	...	Fl Pr.	Ge.	Pu.	Cent.
Pilot.....6-56	H-S.	90	6-3 1/4x5	29.40	L...	He...	Cam.	C.I.	3.50	36.0	3	3/8	.87x2.94	Rod...	11.00	56.0	No.	2.00x2.00	3	2.12x3.50	2.12x4.00	Sp Pr.	Ge.	Pu.	Cent.
Premier.....6D	Ow.	6D	6-3 1/4x5 1/2	27.34	L...	He...	Cam.	Al.	4.00	20.6	3	3/8	.86x3.19	Rod...	11.00	48.3	No.	1.75x2.25	3	2.19x3.13	2.30x3.80	Pr Ca.	Ge.	Pu.	Cent.
Premcar.....6-40	Fall.	T8000	6-3 1/4x4 1/2	23.44	L...	He...	Cam.	C.I.	3.50	28.0	4	3/8	.75x2.87	Pis...	8.12	32.5	No.	2.06x1.62	3	2.25x2.59	2.22x3.00	Sp Pr.	Ge.	Pu.	Cent.
R & V Knight.....H	Ow.	H	6-3 1/4x4 1/2	29.40	S...	Ch...	None	C.I.	4.44	34.0	3	3/8	1.00x3.31	Rod...	10.75	70.0	No.	2.38x2.00	4	2.25x2.25	2.43x3.25	Pr Ca.	Ge.	TS.	None.
Reo.....T6	Ow.	T6	6-3 1/4x5	24.34	F...	He...	Cran.	Al.	4.06	20.0	3	1/8	.98x2.88	Rod...	10.50	49.5	No.	2.25x1.68	4	2.25x2.31	2.25x3.63	Sp Pr.	Ge.	Pu.	Cent.
Revere.....M	Mon.	M	4-4 1/2x6	30.63	H...	Ch...	Cam.	Al.	4.88	40.0	3	3/4	1.25x4.00	Pis...	12.00	68.0	Yes.	2.31x2.50	2	2.31x4.25	2.31x4.31	Pr Ca.	Ge.	Pu.	Cent.
Rickenbacker.....C	Ow.	C	6-3 1/4x4 1/2	23.44	L...	Ch...	None	C.I.	4.25	31.5	3	3/8	1.00x2.65	Pis...	10.00	35.0	Yes.	1.87x2.00	3	2.18x2.18	2.31x2.68	Pr Ca.	Ge.	Pu.	Cent.
Roamer.....4-75E	Dues.	GI	4-4 1/2x6	28.90	H...	Ch...	None	Al.	...	...	3	3/8	...	...	...	...	...	...	...	...	...	...	...	...	
Roamer.....6-54E	Cont.	12XD	6-3 1/4x5 1/2	29.40	L...	He...	None	Al.	...	...	3	3/8	...	...	...	...	...	...	...	...	...	...	...	...	
Rollin.....	Ow.	4	4-3 1/4x4 1/2	16.90	L...	He...	None	Al.	4.25	25.0	4	1/8	.86x2.94	Pis...	9.00	20.0	No.	1.75x2.00	4	1.63x2.25	2.18x2.50	Pr Ca.	Ge.	TS.	None.
Rolls Royce.....40-50	Ow.	40-50	6-4 1/2x4 1/2	48.60	L...	He...	None	Al.	5.10	48.7	4	3/8	1.00x4.25	Rod...	9.90	52.0	No.	2.25x1.86	7	2.25x3.00	2.25x3.75	Fl Pr.	Ge.	Pu.	Cent.
Sayers.....GL	Cont.	6J	6-3 1/4x5	33.75	L...	He...	None	C.I.	4.50	43.0	3	3/8	1.12x1.75	Rod...	11.00	50.0	No.	2.27x1.87	...	2.27x1.40	2.27x3.40	Pr Ca.	Ge.	Pu.	Cent.
Seneca.....50-51C	Lyc.	CF	4-3 1/4x5	21.03	L...	He...	Cran.	Al*	4.12	26.0	3	3/8	1.12x2.90	Flo...	12.00	50.0	No.	2.12x1.81	5	2.12x2.62	2.12x2.62	Pr Ca.	Ge.	TS.	None.
Star.....	Cont.	Spec.	4-3 1/4x4 1/2	15.63	L...	Ch...	None	C.I.	...	...	3	3/8	...	...	...	...	...	...	...	...	...	...	...	...	
Stearns Knight.....4	Ow.	Kni	4-3 1/4x5 1/2	22.50	S...	Ch...	None	C.I.	...	...	4	3/8	...	...	12.37	56.0	Yes.	...	3	1.50x1.78	1.50x2.75	Sp Pr.	Ge.	Pu.	Cent.
Stearns Knight.....6	Ow.	Kni	6-3 1/4x5	25.35	S...	Ch...	None	C.I.	...	...	4	3/8	.96x	Pis...	11.02	58.0	No.	2.50x2.00	4	2.50x2.37	2.50x4.00	Pr Ca.	Ge.	Pu.	Vane.
Stephens.....20-104	Ow.	20	6-3 1/4x4 1/2	25.35	L...	He...	Cam.	C.I.	3.62	30.0	3	3/8	1.00x2.94	Rod...	8.50	53.0	No.	2.25x1.50	3	2.12x2.00	2.25x3.15	Fl Pr.	Ge.	TS.	None.
Sterling Knight.....L6	Ow.	Kni	6-3 1/4x4 1/2	25.35	S...	Ch...	None	C.I.	3.87	23.5	3	3/8	.87x3.03	Flo...	11.00	41.5	No.	2.12x1.62	7	2.50x2.00	2.50x3.50	Fl Pr.	Ge.	TS.	None.
Studebaker.....L6	Ow.	L6	6-3 1/4x4 1/2	23.44	L...	Ch...	None	C.I.	3.38	...	4	3/8	.87x2.75	Pis...	10.00	...	No.	2.00x1.50	4	1.94x3.62	2.12x3.03	Sp Pr.	Ge.	Pu.	Cent.
Studebaker.....S6	Ow.	S6	6-3 1/4x5	29.40	L...	He...	None	C.I.	4.73	...	4	3/8	.99x3.02	Pis...	10.00	...	No.	2.00x2.18	4	2.00x2.81	2.25x3.15	Sp Pr.	Ge.	Pu.	Cent.
Studebaker.....B6	Ow.	B6	6-3 1/4x5	36.04	L...	He...	None	C.I.	4.68	...	4	3/8	.99x3.44	Pis...	10.00	...	No.	2.00x2.18	4	2.00x2.81	2.25x3.15	Sp Pr.	Ge.	Pu.	Cent



## Motor Age Passenger Car Serial Numbers

Year	Model	Cyls.	Price	Serial Numbers
1920	L	6	\$2260	1001 to 1556
1921	G & H	6	2975	
	L	6	2260	
			Discontinued	

Year	Model	Cyls.	Price	Serial Numbers
1915	34	4	\$ 895	3499-5233
1916	37	4	795	6000-15631
1917	Classic	4	850	
1918	41	4	1095	18000-21000
1919	43	4	1395	
			Number stamped on front motor cross member	
1920	43	4	\$1495	50001 and up
			Number stamped on frame of right front spring hanger	
1921	Series 43	4	\$1385	
			Discontinued	

Year	Model	Cyls.	Price	Serial Numbers
1922	R	6	\$4500	4150-4164
			Number of left front horn. Production suspended	

Year	Model	Cyls.	Price	Serial Numbers
1917	A	6	....	1-250
1918	B	6	\$1375	251-1000
1919	B	6	1865	1894-2378
1920	B-6	6	1865	
			Number on left side of motor	
			Number of inside of dash under hood, left hand side	
1921	C-6	6	\$2275	3000-4000
1922	C	6	1850	
1923	D-66	6	1785	5,000 and up
			Number on plate under seat	

Year	Model	Cyls.	Price	Serial Numbers
1915	100-A	6	\$1345	
1916	200-A	6	1435	
1917	300-A	6	1550	
1918	400-A	6	1435	
1919	Series 30	6	1850	
1920	Series 30	6	1850	
1920	30A-30G	6	1850	331-37272
1921	Series 40	6	1795	423-38129
1922	Series 40	6	1650	4155-42157
1923	41	6	1195	
1923	Series 50	6	1595	
			Numbers are arranged by body styles and do not run consecutively.	
			Number on plate under hood, right side dash.	

Year	Model	Cyls.	Price	Serial Numbers
1919	....	4	\$4750	....-110
1920	....	4	4750	2011 up
			Discontinued.	

Year	Model	Cyls.	Price	Serial Numbers
1915	40	4	\$1350	8500-10500
	45	6	1485	
1916	6-16	6	1550	10501-12000
				15000-16000
	8-16	8	1850	12001-13000
1917	6-17	6	1750	16001-17000
	8-17	8	2000	12000-13000
1918	6-18	6	....	17000 up
	8-18	8	2550	
1919	8-19	8	2800	
	Anvsy.	8	4000	18000-21000
1920	8-20	8	2950	
	Anvsy.	8	4000	
			Number on right front engine leg.	
	8-20	8	\$3500	19000-21702
	Anvsy.	8	4250	
1921	8-21-S	8	3500	
1922	8-21-S	8	2620	25200-30000
1923	8-23-S	8	2800	25200-30000
1923	6	6	1535	
			Number on right front side of crankcase.	

Year	Model	Cyls.	Price	Serial Numbers
1915	4-36	4	\$1075	
	6-40	6	1500	
1916	6-38	6	1050	
	6-40A	6	1375	
	4-38	4	985	
1917	6-39	6	1145	
	6-44	6	1535	
1918	6-39-B	6	1345	
	6-44	6	1685	
1919	6-39H & 39K	6	1695	
			Number on floor board in front under cowl.	
1920	6-39	6	\$1795	22100 and up.
			Number on end of seat, left side. The serial numbers of this car do not run consecutively or by years.	
1921	6-39	6	\$1695	29725-33359
			33360-34116	
1922	6-51	6	1575	33360-36999
1923	6-43	6	1095	50,000 and up.
1923	6-63	6	1595	37,000 and up
			Number on footboard in driver's compartment.	

Year	Model	Cyls.	Price	Serial Numbers
1915-16	77	6	\$6000	FO12-F1045
1916-17	66	6	3800	C1003-C2862
1918	12-Cyl.	12	3750	C-1003C2862
			Discontinued.	
			Number on instrument board.	

Year	Model	Cyls.	Price	Serial Numbers
1922	6	6	\$1395	35000-35211
1923	6-50	6	1395	
			Number near light bracket, right hand side rail.	

Year	Model	Cyls.	Price	Serial Numbers
1918	18-T	6	\$1530	1018-11008-
1919	19-T	6	1580	1019-11609
1920	20-T	6	1630	210-21290
1921	20-T	6	1775	21300-21540
1922	20-T	6	1175	21550-21820
1923	20-T	6	1495	21830 and up
			Number on outside of right front frame horn and on plate on dash under hood.	

Year	Model	Cyls.	Price	Serial Numbers
1915	C	4	\$1700	C200-C299
			1700-	
1916	D	4	1850	D300
1917	D	4	2275	D
1918	H	4	2750	H100-H1099
1919	H	4	2985	H1100-H1179
1920	B-1	4	3950	2000 up
	B-5	4	....	1500 up
			Number on dash; engine number on upper left front crankcase.	
	B-1	4	\$3950	2000 up
1921	B-1	4	3475	3000 up
1922	B-1 & B-5	4	2950	3500 up
1923	B-1 & B-5	4	2950	4000 and up
			Number on right side of dash.	

Year	Model	Cyls.	Price	Serial Numbers
1920	30-B	4	....	B-126 up
	40	4	....	42000 up
	45-B	6	....	N-151 up
			Number on name plate on dash.	
1921	Super 4	4	\$1345	
	Light 4	4	1195	
	Light 6	6	1595	
			Production Limited.	

Year	Model	Cyls.	Price	Serial Numbers
1916	17	6	\$1250	1-267
			Number on dash under hood; engine number on left side crankcase.	
1917	17-B	6	\$1500	1000-1022
			Number on top of seat frame under cushion.	
1918	18-B	6	\$1850	1100-1104
1919	....	....	....	1105-1134
			Number on dash under hood. No record of 10 or 12 cars built by Shadburn Bros., Anderson, Ind.	
	20	6	\$1595	
1920	..	6	1700	1 up
			9-1-19	
1920	20	6	1825	1-200
	21	6	2585	2000-2096
			Number on front seat base opposite left hand door; engine number on left side crankcase.	
			Number on front seat near floor board.	
1921	21-S	6	\$2385	
			Discontinued.	

Year	Model	Cyls.	Price	Serial Numbers
1920	H	4	....	1400 up
			Number under front seat, on dash and on bottom of all doors.	
			Discontinued.	

Year	Model	Cyls.	Price	Serial Numbers
1915	41	4	....	
1916	41	4	....	41001-41242
1917	41	4	....	
1918	41	4	....	
1919	41	4	....	91242-91241
1920	41	4	\$9000	41242-41341
1921	41	4	7000	
1922	41	4	5000	
1923	41	4	5700	02342 and up.
			Number on plate screwed on the motor side of dash.	
			Serial numbers do not run in rotation.	

Year	Model	Cyls.	Price	Serial Numbers
1916	4-38 & 8-38	4	....	5001-8751
			Number on front seat heel board.	
	4-24	4	....	15001-18846
1917	4-24	4	....	18847-26804
1917-18	4-24	4	....	26805-34885
1919	4-24	4	....	34886-45786
1920	4-34	4	\$1185	M-550-M-558
			50000-57500	
1921	4-34	4	1085	57500 and up
1922	4-43	4	....	58588-58606
			Number on dash plate.	
			Name changed to Earl	
			Discontinued.	

Year	Model	Cyls.	Price	Serial Numbers
1920	S-20	2	\$ 395	1-1500
			Number on front of timing gear housing.	
1921	S-21A	2	395	
			Discontinued.	

Year	Model	Cyls.	Price	Serial Numbers
1914	B-24-25	4	\$ 950	
				1050
	B-36-37	4	1235	
				1335
	B-55	6	1985	
1915	C-25-24	4	900	100000-144715
				950
	C-36-37	4	1185	
				1235
	C-54-55	6	1635	
				1650

Year	Model	Cyls.	Price	Serial Numbers
1916	D-44-45	6	985	
				1020 144717-254501
	D-54-55	6	1450	
				1485
1917	D-44-45-46	6	1040	
				1070
				1440 254502-343782
	D-34-35-37	4	660	
				675
	E-49	6	1385	
1918	E-4-34-35	4	795	
	E-6-44	6	1265	
	E-6-45-46	6	1265	
				1695 343783-490995
	E-6-49-50	6	1495	
				2175

Year	Model	Cyls.	Price	Serial Numbers
1919	H-44-45	6	\$1495	
	H-46-47	6	1985	
				2195 480996 up
	H-49-50	6	1785	
				2585

Year	Model	Cyls.	Price	Serial Numbers
1920	K-44-50	6	\$1495	547524-689794
1921	44-7	6	1525	
	48-50	6	1735	
1922	34-37	4	935	688795 and up
1922	44-47	6	1395	753000 and up
1922	48-50	6	1785	753000 and up
1923	34-39	4	885	826497 and up
1923	41-47	6	1195	868521 and up
1923	48-55	6	1435	881721 and up
			Number on left frame at rear.	
			Numbers run according to body style.	

Year	Model	Cyls.	Price	Serial Numbers
1912	1912	4	\$1800	61006-75000
1913	1913	4	1975	75001-90018
1914	1914	4	1975	91005-99999
				A1-A5008
1915	Type 51	8	1975	A6000-A19001
1916	Type 53	8	2080	A20000-A38003
1917	Type 55	8	2080	
			before Dec. 14, 1917	55-A1-55-S2
			after Dec. 14, 1917	\$2240

Year	Model	Cyls.	Price	Serial Numbers
1918-19	Type 57	8	\$3220	57-A1-57-TT-146
1920-21	Type 59	8	3590	59-A-1 to 59-BB-13
			Number on left front of engine in four-cylinder models. Number back of the right cylinder block on eight. For 1917 and 1918 the figures in front of letter indicate type of car the number following letter the number of engine for that particular letter.	
1921-22	61	8	\$3150	61-A-1 to 61-3-18006
1923	61	8	2885	B-63-A-1 and up
			Number stamped on the right rear corner of crank case at the rear of the right cylinder block.	

Year	Model	Cyls.	Price	Serial Numbers
1918	....	4	\$ 835	1-537
1919	C-4	4	1000	538 up
			Number plate on left side of dash under hood.	
			Discontinued.	

Year	Model	Cyls.	Price	Serial Numbers
1920	C	6	....	321-1 to 321-105
1921	C	6	\$3985	
	D	6	3185	
			Serial number on dash.	
			Discontinued.	

CASE				
Year	Model	Cyls.	Price	Serial Numbers
1915	R	4	\$1350	26334-28340
1916	T	4	1190	28341-31350
1917	T-17	4	1190	31351-32354
1918	U-18	6	1875	32355-34856
	U-19		2100	
1920	V	6	2650	34860 to 37287
1921	V	6	2650	37780-38744
1922	W	6	2200	43751-44035
	X	6	1790	38755-40017
1923	X	6	1790	39441 to 40807
1923	W	6	1990	43860 to 44284

Number on dash and in front cross bar of frame.

## CHALMERS

Year	Model	Cyls.	Price	Serial Numbers
1915	26-A	6	\$1800	
	26-B	6	1850	
		Aug. 1, 1914	1700	38600-44999
		Sept. 1, 1914	1650	
	26-C	6	1550	45000-45799
	29	6	2400	45801-47300

Numbers from here on are by models and not by year.

32-A	6	\$1400	47500-49599
32-B	6	1350	
	Aug. 1, 1915	1450	50600-56999
	April 1, 1916	1350	
35-A	6	1050	55700-76699
35-B	6	1280	
	Jan. 1, 1917	1350	
	Nov. 1, 1917	1450	75700-82000
	Nov. 24, 1917	1535	
	April 8, 1918	1615	
35-B	6	1765	
	July 12, 1919	1765	82000 up
35-C	6	1250	
	Nov. 1, 1917	1365	
	Nov. 24, 1917	1485	94001 up
	April 8, 1918	1565	
	July 12, 1919	1685	

Number on 1915-16 models on left frame member under front boards. Number on 1916-17-18-19 models on left front horn of frame.

1920	Roadster	6	\$1795	94001 to 110000
				111101 to 112000
	5-Passenger	6	1795	115001 to 200000
	7-Passenger	6	1945	240001 and up
	Sport	6	1995	115001 to 200000
	Coupe	6	2595	115001 to 200000
	Sedan	6	2745	111101 to 112000
				114001 to 114101

1921 6-30 & 35-B 6 1545 200000 up  
Number on brass plate on left horn of frame just in front of radiator.

1922	35-B	6	3395	225001-225203
				125509-219332
	35-C	6	1495	130001-131308
				131502-131505
1923	Y	6	1185	Y-1000 and up.

Number on right frame rail, in front of dash.

## CHAMPION (Formerly Direct Drive)

Year	Model	Cyls.	Price	Serial Numbers
1918	....	4	....	101-113 demonstrating models only
1919	C & CS	4	\$1150	C-100-C-216
1920	C-4	4	....	C-300 up

Number plate on body under seat.

1920	Touring	4	\$1350	100 to 299
1921	Tourist	4	1250	C200-C299
	Special	4	1595	CS200-CS299

1922 Production Limited 4 \$ 895 C-400 and up

1923 Touring 4 \$ 895 C-400 and up

Number on inside dash on instrument board.

## CHANDLER

Year	Model	Cyls.	Price	Serial Numbers
1913	14	6	\$1785	1-550
1914	15	6	1785	551-250
1915	15-B	6	1295	2501-4000
1916	16	6	1295	4001-15000
1917	17	6	1295	15001-35000
1918	New Series	6	....	35001-65000
1919	New Series	6	....	65001 to 82000
1920	New Series	6	1895	82001 to 106000

Number on right front engine arm up to car number 72000; cars numbered above 72000 the number is on frame under right headlight and fender.

1921 6 \$ 1785 106001 to 115000  
Chandler cars are not listed by serial numbers for each year, but are classed as new series of current model.

1922 6 \$ 1595 115001-126300

1923 SS 6 1485 126001 and up.

Number stamped on right hand frame rail behind front fender iron.

## CHEVROLET

Year	Model	Cyls.	Price	Serial Numbers
1915	H-2	4	\$ 750	
	H-4	4	875	
	L	6	1425	
1916	490	4	490	
	H-4	4	750	
1917	490	4	490	
	F-5	4	800	
	D-5	8	1385	
1918	490	4	635	
	FA-5	4	935	
	D-4	8	1385	
	D-5	8	1385	
1919	FA-5	4	1045	
	D-4	8	1385	
	D-5	8	1385	
	FB-5	4	1135	
1920	490	4	735	
	FB-50	4	1135	
	490	4	735	
	T	4	1480	1-2284 to 1-4199
				2-2202 to 2-36617
				3-1301 to 3-1952
				6-1645 to 6-2382
				9-356 to 9-847
	FB Touring	4	1295	1-9385 to 1-20516
	FB Roadster	4	1270	2-4739 to 2-11448
	FB Sedan and Coupe	4	1855	3-54 to 3-1500
				6-1290 to 6-4990

## CHEVROLET—Continued

				9-1336 to 9-4604
	490 Roadster	4	775	1-92475 to 1A-20160
	490 Touring	4	795	2-90422 to 2A-23673
	490 Coupe	4	1170	3-47101 to 3-70100
	490 Sedan	4	1245	6-36885 to 6-51094
				7-25430 to 7-34200
				9-28154 to 9-40225

1921 490 4 645

FB 4 1185

1922 490 4 525 59934-101981

FB 4 975 2253-39556

1923 Superior 4 525

Number on plate under instrument board on dash.

As Chevrolet cars are numbered by manufacturing zones it is not possible to reproduce the numbers in such a way as to be of use to the dealer. In case of doubt write the Chevrolet Motor Co., General Motors Building, Detroit, Mich.

Number on dash.

NOTE.—The numbers 1-2-3-6-7-9 before the serial numbers indicate the plant from which the car was made. No. 1 Plant, Flint; No. 2 Plant, New York and Tarrytown; No. 3 Plant, St. Louis; No. 6 Plant, Oakland; No. 7 Plant, Fort Worth; No. 9 Plant, Oshawa, Ont.; No. 9 Plant, Cincinnati, Ohio; No. 12 Plant, Buffalo, N. Y.; No. 21 Plant, Janesville, Wis.

## CLEVELAND

Year	Model	Cyls.	Price	Serial Numbers
1919	40	6	\$1395	1001 to 3485
1920	40 Touring	6	1385	3485 to 21190
	40 Roadster	6	....	3490 to 21190
	40 Sedan	6	....	3914 to 21190
	40 Coupe	6	....	1398 to 21190
	40 Chassis	6	....	4174 to 21190
1921	40	6	1295	21190-25000
1922	41	6	1195	25000-34500

Number plate on right hand frame members about 12 inches in front of radiator; engine number front of crankcase under oil filler.

1923 42 6 \$ 995 34500-55000  
Number stamped on the outside of right hand front frame member, and to the rear of the front spring bolt.

## CLIMBER

Year	Model	Cyls.	Price	Serial Numbers
1920	T	4	\$1465	213 to 320
	S	6	2395	1001 to 1112
1921	4	4	1385	T100-T390
	6	6	2250	S1000-S1400
1922	Production limited.			
1923	4	4	1095	Production limited
1923	6	6	1695	Production limited

Number on left front frame.  
Number on left front frame horn and also on motor.

## CRAWFORD

Year	Model	Cyls.	Price	Serial Numbers
1915	15-6-35	6	\$1850	
	15-40	6	2100	988-1090
1916	16-40	6	1650	1091-1195
1917	17-40	6	1750	1196-1234
1918	18-40	6	2250	1235-1294
1919	19-6-40	6	2500	1295-1337
1920	20-6-40	6	3000	1338 to 1650
1921	6-40	6	3000	

Number on seat next to door.

1922 22-6-70 6 3000 1485-1570

1923 23-6-70 6 3100 1575 and up

See Dagmar.

Number on floor boards under cowl.

## COLE

Year	Model	Cyls.	Price	Serial Numbers
1915	660	6	....	15000-15175
	666	6	....	15175-16000
	Series 10	4	....	18000-20000
	Series 10	4	....	20000-22000
	Little 6	6	....	22000-23000
	440	4	....	23000-24000
	650, Sensible 6	6	....	24000-25000
	651, Little 6	6	....	27000-30000
	850	8	....	15175-16000
1916	666, Big 6	6	....	30000-40000
	860, Series 30	8	....	40000-50000
1917	860, Series 40	8	....	50000-59478
1918	870	8	....	59389 up
1919	870	8	\$3250	
1920	870	8	3250	
	871	8	3250	
	872	8	3250	
	878	8	4350	59000 approximate to
	879	8	4450	65000 approximate
	883	8	4250	
	884	8	4450	
	885	8	4450	
1921	890	8	3250	
1922	890	8	2485	66875-68644
1923	890	8	2175	69650 and up

Number on right front spring hanger and under right front seat cushion.

1920 870 8 59389 up

870 8 \$3250

871 8 3250

872 8 3250

878 8 4350 59000 approximate to

879 8 4450 65000 approximate

883 8 4250

884 8 4450

885 8 4450

1921 890 8 3250

1922 890 8 2485 66875-68644

1923 890 8 2175 69650 and up

Number on right front spring hanger and under right front seat cushion.

1920 870 8 59389 up

870 8 \$3250

871 8 3250

872 8 3250

878 8 4350 59000 approximate to

879 8 4450 65000 approximate

883 8 4250

884 8 4450

885 8 4450

1921 890 8 3250

1922 890 8 2485 66875-68644

1923 890 8 2175 69650 and up

## COLUMBIA—Continued

1920	C	6	1695	4000 and up
	D	6	1845	1400 and up
	E-CS	6	2850	2000 and up
	H	6	....	100 and up
	E-CS-H	6	....	10000 and up
1921	DC & CS	6	1795	10000-20000
1922	8-R	6	1475	21400 up
	6-Y	6	985	1 up
1923	8-R	6	2175	21400 and up
1923	6-Y	6	1475	3331 and up

Number on upper toe board.

## COMET

Year	Model	Cyls.	Price	Serial Numbers
1917-18	C-51	6	....	1-500
1919	C-52	6	....	500 up
1920	C-53	6	\$2150	701 and up
1921	C-53	6	2450	

Number under hood on dash, left side.

Discontinued.

## COMMONWEALTH

Year	Model	Cyls.	Price	Serial Numbers
1913	38	4	\$ 975	A1000-A1366
1914	38	4	975	B203-A411
	20	4	495	B001-B174
1915	38	4	1075	A966-B36
	20	4	495	C195-CX17
1916	32	4	895	CX2-C194
1917	40	4	995	D219-D479
1918	40	4	995	DX732-D0883
1919	40	4	1395	.... 41999
1920	42	4	1395	42000 to 44000
1921	44	4	1595	

Number plate on cowl.

1922 Production limited.

Discontinued.

## COURIER

Year	Model	Cyls.	Price	Serial Numbers
1922	6	6	\$1395	10000-10145
1923	6	6	1295	10150 and up

Number on left front spring horn.

Discontinued.

## CROW-ELKHART

Year	Model	Cyls.	Price	Serial Numbers
1915	E-45	4	\$1145	
	E-65	6	2250	6501-7200
	E-66	6	2350	
	E-25	4	725	
1916	CE-30	4	725	7201-9025
	CE-33	4	795	
1917	CE-33	4	935	9026-13295
	CE-35	4	845	

Number plate on dash.

1918 CE-32-34 &amp; 36 4 \$ 995 13296-15292

1919 CE-32-34 &amp; 36 4 1095

H-42-44 &amp; 46 6 1355 15293-17411

1920 S-65-64-63-67 6 1745 18900 to 19930

L-65-64-63 4 1495 18901 to 19933

1921 L-63-65 4 1295

S-63-65 6 1545

Number on seat frame under front cushion.

1922 Production limited.



**DANIELS**

Year	Model	Cyls.	Price	Serial Numbers
1916	A	8	.....	103-257
1917	A	8	.....	258-302
	B	8	.....	401-560
1918	A	8	.....	361-383
	B	8	.....	561-741
1919	B	8	.....	742-873

Number on top of front gear case cover; engine number on crankcase near distributor.

1920	D	8	\$4500	1100 and up
	C	8	.....	1000 and up
1921	D-19	8	5350	1100-1769
1922	D-19	8	4350	1838-2087
1923	38	6	4950	2090 and up

Number on dash board on right hand side.

**DETROITER**

Year	Model	Cyls.	Price	Serial Numbers
1916	F	4	\$ 985	15000-20000
	6-45	6	.....	1098
1917	6-45	6	1195	20000 up

Discontinued. Number on dash plate.

**DIRECT DRIVE—See Champion****DISPATCH**

Year	Model	Cyls.	Price	Serial Numbers
1920	D-G-1	4	\$1350	B-20-1 and up
	H-E	4	.....	B-20-1 and up

Discontinued.

**DIXIE FLYER**

Year	Model	Cyls.	Price	Serial Numbers
1916	L	4	\$ 795	Under 2200
1917	L-X	4	885	2200-3500
1918	L-S	4	(995)	1095/3500-5000
1919	H-S-50	4	1365	5000 up
1920	H-S-50	4	1465	7001 to 11000
1921	H	4	1445	9000-10300
1922	H	4	1175	10300-12000

Number on dash at left hand spring horn.

Discontinued.

**DODGE**

Year	Model	Cyls.	Price	Serial Numbers
11-14-14 to 10-31-17		4	.....	1-200000
8-18-15 to 2-1-18		4	.....	25000-225000
2-9-16 to 4-26-18		4	.....	50000-250000
6-15-18 to 8-8-18		4	.....	75000-275000
10-23-16 to 12-13-18		4	.....	100000-300000
2-17-17 to 3-19-19		4	.....	125000-325000
5-1-17 to 3-19-19		4	.....	150000-250000
8-3-17		4	.....	175000-275000

Number stamped on frame under floor board; engine number on left side just above carburetor.

1920	Touring	4	\$1185	
	Roadster	4	1185	423641 to 569548
	Sedan	4	2000	
	Coupe	4	1850	

Number stamped on the right head motor leg.

1921	4	4	\$ 985	569549 to 663096
1922	4	4	880	663000-826401
1923	4	4	880	826422 to 1000000

Number on plate on toeboard, also on right side of center frame cross member.

**DORRIS**

Year	Model	Cyls.	Price	Serial Numbers
1915	I-A-4	4	\$2250	6111-6220
1916	I-A-6	6	2475	8001-8140
1917	I-B-6	6	2475	8141-8289
1918	I-C-6	6	2985	8300-8392

Number on name plate left side of motor.

1919	6-80	6	\$4350	8401-8674
1920	6-80	6	4350	8675 to 9000
				9017 to 9088
1921	6-80	6	4785	9089 to 9229
1922	6-80	6	3950	9230 to 9345
1923	6-80	6	3950	9346 to 9542

Serial number on top of crankcase.

**DORT**

Year	Model	Cyls.	Price	Serial Numbers
1915	M-4	4	\$ 540	
	M-5	4	680	
1916	M-5A	4	725	
1917	M-6	4	695	
	M-9	4	695	9204-24368
	M-9S	4	1065	Up to Feb. 21, 1918
	M-9T	4	815	
1918-19	M-8	4	865	
	M-8C	4	1265	
	M-11	4	865	24369-49330
	M-11S	4	1265	Up to Oct. 4, 1918
	M-11T	4	1000	
1920	M-15	4	985	
	M-15S	4	1535	49331 up
	M-10	4	985	
	M-10C	4	1535	

Number on frame under left head lamp, also on shroud board.

15 4 \$985 51673 to 77951

Starting number Nov. 1919. Ending Nov. 1920.

Number on dash under hood.

1921	17-12	4	\$ 985	80459 to 87850
1922	19-14	4	885	87856-95699
1923	18	4	885	95309 and up
1923	20	6	1025	102860 and up

Number on plate on left side dash.

**DUPONT**

Year	Model	Cyls.	Price	Serial Numbers
1921	A	4	\$3400	
1922	A	4	3200	1-500

**DUPONT—Continued**

Serial numbers do not run consecutively.

Number on right side of upper crankcase.

1923	A	4	\$2090	1 to 500
1923	C	6	2090	501 and up

Number on dash under cowl.

**DURANT**

Year	Model	Cyls.	Price	Serial Numbers
1921	A-22	4	\$ 890	1 to 2325
1922	A-22	4	890	
	B-22	6	1650	X100-4682

Number on plate on front dash under hood.

1923	A-22	4	890	
1923	B-22	6	1650	

Number on right side of dash under hood.

As Durant cars are numbered by manufacturing zones, it is best to obtain serial numbers from Durant Motor Co., Long Island City, N. Y.

**EARL**

Year	Model	Cyls.	Price	Serial Numbers
1921	40	4	\$1095	70000 to 70433
1922	40	4	1095	70434-74363
1923	40	4	1095	74364 to 80401

Number on front of dash.

Discontinued.

**DUESENBERG**

Year	Model	Cyls.	Price	Serial Numbers
1923	8	8	\$5500	598 to 950

Number on right hand side front dash.

**ESSEX**

Year	Model	Cyls.	Price	Serial Numbers
1918			.....	A-5000, A-34999, A-35000, A-39999

1919 A 4 \$1595 5000-25000

1595 60000-63000

2250 70000-75004

5000 to 52999

5000 to 7-A 4 53000 to 59999

5-A to 7-A 4 6000 to 68999

5-A to 7-A 4 69000 to 69999

5-A to 7-A 4 70000 to 83999

5-A to 7-A 4 84000 to 84999

5-A to 7-A 4 85000 to 89499

5-A to 7-A 4 89500 to 89999

4 600000 to 749999

4 750000 to 779999

4 800000 to 834999

4 835000 to 839999

4 840000 to 848999

4 849000 to 849999

4 850000 to 874999

4 875000 to 876999

4 900000 to 907999

4 908000 to 909999

1921 4 1445 910000 and up

1922 4 1095

1923 4 1045

1923 6 850 100001 and up

Serial Number on dash.

Serial numbers are not designated on a yearly basis.

**ELCAR**

Year	Model	Cyls.	Price	Serial Numbers
1916	A	4	.....	500-2000
	B	4	.....	500-2000
1917	D, E, F	4	.....	2001-4999
1918	D, E, G	4	.....	5000-5930
	D, E, G	6	.....	10000-10860
1919	D, H, G	4	.....	5931-9999
	D, H, G	6	.....	10861-14999
1920	Touring	4	\$1495	15000 and up
	Sportster	4	1495	15000 and up
	Coupe	4	2095	15000 and up
	Sedan	4	2195	15000 and up
	Touring	6	1795	25000 and up
	Sportster	6	2395	25000 and up
	Coupe	6	2395	25000 and up
	Sedan	6	2495	25000 and up

Number on dash

1921 K-4 6 1300 20000-21000

7-R 6 1700-21000-32000

1922 K-4 4 1095 20000-25000

7-R 6 1395 30000-33000

1923 4-40 4 \$ 995 25000 and up

1923 6-60 6 1395 33001 and up

Number on right rear spring horn.

**ELGIN**

Year	Model	Cyls.	Price	Serial Numbers
1916	6	6	\$ 845	1-1720
1917	17	6	985	17-100—17-3900
	17	6	1095	17-3901—17-6964
1918	17	6	1165	17-6965—17-7400
	17	6	1235	17-7400—17-7764
1919	H	6	1395	101-1500
	H	6	1485	1501-2600
1920	K	6	1485	K-2601 to K-10638

Number plate on 1916-1917 and 1918 models, located on dash,

right side, under hood. On Series H models, number plate

on right front side. On Series H sedan models, number

plate on dash, right side.

1921 K-1 6 \$1495

1922 Production limited.

1923 Production suspended.

**EMPIRE**

Year	Model	Cyls.	Price	Serial Numbers
1913-14	31	4	\$ 950	315750-318672
1914	31-40	4	900	405101-406190
1915	33	4	975	331001-333300
	40	4	975	401001-401675

**EMPIRE—Continued**

1916-17	45	4	935	451001-452603
	60	6	1095	601001-603412
1917-18	50	4	1125	50001 up
	70	6	1345	70001-70350
	70-A	6	1375	70A001-70A710
	73	6	1360	73001-73059

Discontinued.

Number on heel board of front seat.

**F. R. P.**

Year	Model	Cyls.	Price	Serial Numbers
1914	A-45 and B	4	\$7000	1-100
1915	A-45 and B	4	7000	1-100
1916	A-45 and B	4	7000	1-100
1917	A-45 and B	4	7000	1-100
1918	B-45	4	.....	

Name changed to Porter.

**FLINT**

Year	Model	Cyls.	Price	Serial Numbers
1923	6	6	\$1195	

Number on plate on dash under hood.

**FORD**

Year	Cyls.	Price	Serial Numbers
10-1-12—9-30-13	4	\$ 690	15001-332500
10-1-13—7-31-14	4	....	332501-539000
8-1-14—7-31-15	4	....	539001-855500
8-1-15—7-31-16	4	....	855501-1362200
8-1-16—7-31-17	4	....	1362201-2113500
8-1-17—7-31-18	4	....	2113501-2756251
8-1-18—7-31-19	4	....	2756252-3277851
8-1-19—9-30-19	4	....	3277852-3429400
1920.....	4	525	3659971 to 4698420
1-1-21—12-3-21	4	510	4698416 to 5638071
1922	4	348	5638072-6953071
1923 T	4	298	6953072 and up

Number stamped on left side cylinder block just above water inlet connection. Car and engine number the same from May 1, 1915.

**GRAY**

Year	Model	Cyls.	Price	Serial Numbers
1922	N	4	\$ 490	1000 to 6004
1923	N	4	520	6005 to 23840

Number on left side of engine block, rear of water inlet.

**H. C. S.**

Year	Model	Cyls.	Price	Serial Numbers
1920	2	4	\$2975	1-550
1921	3	4	2475	601-1419
1922	3	4	601-1699	
1923	4	4	2400	1701 to 2200
1923	4	6	2650	3000 and up

Number on dash and on cross member of frame.

**HACKETT (Name changed to Lorraine in December 1919)**

Year	Model	Cyls.	Price	Serial Numbers
1917	5-pass.	4	\$ 885	50-501
1918	5-pass.	4	985	534-594
1919	5-pass.	4	1125	601-694

Number on dash under hood, and one end of frame.  
Discontinued.

**HAL**

Year	Model	Cyls.	Price	Serial Numbers
1916	12	12	\$2100	Can be distinguished by straight windshields and carpet paneling on back of front seat.
	12	12	2385	Introduced September, 1916. Can be recognized by walnut paneling on front seat back.
1917	12	12	2600	A new pocket-style tire carrier is fitted.
1918	25	12	3600	

Discontinued.

**HALLADAY**

Year	Model	Cyls.	Price	Serial Numbers
1920	20	6	\$1885	20001-20999
1921	21	6	1985	

Number on dash.  
Discontinued.

**HANSON**

Year	Model	Cyls.	Price	Serial Numbers
1918	A-45	6	\$1685	1001-1025
1919	A-45	6	1685	1026-1625
1920	....	6	....	1700 up

Number on right side heel board under front seat; engine numbers left side crank case.

1921	54-T	6	....	2395 to 2530
	60-S	6	\$2285	4500 to 4615
1922	60	6	1585	9000 up
1923	66	6	1395	9000 and up

Number on left front seat riser.

**HARROUN**

Year	Model	Cyls.	Price	Serial Numbers
1917	A-A-1	4	695	101-549
1918	A-A-1	4	895	550-2381
1919	A-A-1	4	995	2382-2624
1921	A-A-2	4	1195	

Number plate on right side front seat, under cushion.  
Discontinued.

**HATFIELD**

Year	Model	Cyls.	Price	Serial Numbers
1919	A-42	4	....	....-678
1920	A-42	4	....	.... 700 up
1921	A-42	4	\$1495	....
1922	A-42	4	1345	....
1923	A-22	4	1345	....

**HAYNES**

Year	Model	Cyls.	Price	Serial Numbers
1914	26	6	\$2700-	3200
	27	6	2785-	6601-9499
	28	4	3830	
	28	4	1985-	2700
1915	32	4	1660-	2500
	30	6	1485	8552-10949
	31	6	2250-	3000
	33	6	1550	
1916	34	6	1385	
	34	6	1485	
	35	6	1495	
	37	6	1725-	10951-15999
	36	6	2250	
		6	1595-	1750-
		6	2150	
	41	12	2225-	21000-24000
	40	12	2890	
		12	2095-	2760
1917	36	6	1595-	
		6	2260	16002 to 29608
	37	6	1725-	2390
1918	38-39	6	2150-	
		6	3250	29650 to 32893
	44	12	2910-	
		12	3985	21000-24000
1919-20	45	6	2685-	
	46	12	4200	32894 to 37999
		12	3450-	4200/21364 to 21516

Number plate on owl at extreme right; also on timing gear housing.

1920	47	6	....	38000 to 44185
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Number on dash.

**HAYNES—Continued**

1921	48	12	\$3635	....
	55	6	1985	46000 to 50700
	75	6	2395	75500 to 76800

Number between cylinder block and radiator on crankcase.

1922	75	6	\$2395	....
	55	6	1595	....
	48	12	3595	....

Number on right hand front motor support.  
Serial numbers did not run consecutively in 1922.

1923	60	6	\$1295	54000 to 55083
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Number on top of timing gear housing.

**HOLLIER**

Year	Model	Cyls.	Price	Serial Numbers
1915	158T	8	\$ 985	1-580
	158R	8	985	1-60
1916	168T	8	985	590-623
1917	176T	8	1085	1-35
	176R	8	1085	1-35
	178R	8	1185	1-51
1918	186T	8	1185	
	188T	8	1385	6194-7010
1919	206T	8	1785	10001-10093
1920	206B	6	1985	10083 up

Number on heel board of front seat.  
Discontinued.

**HOWARD—See Lexington.**

**HOLMES**

Year	Model	Cyls.	Price	Serial Numbers
1918	1	6	\$2900	1-500
1919	2	6	2900	500 up
1920	3 Touring	6	3350	
	3 Roadster	6	....	
	3 Sedan	6	....	19851 to 40000
	3 Coupe	6	....	
1921	Series 4	6	3350	
1922	4	6	2500	40310 up

Number on right side rear end of frame.  
1923 production limited.

**HUDSON**

Year	Model	Cyls.	Price	Serial Numbers
1914	54	6	....	56501-61700
	40	6	....	63001-77201
1915	40	6	....	73501-90000
	54	6	....	59001-62000
1916	40	6	....	G10001-G40000
1917	H	6	....	H1-H99999
	J	6	....	1-96499
	4J	6	....	75000-97999
1918	M	6	....	5000-97499
1919	O	6	....	5000-90999

Numbers on all cars in right hand frame. Also on left side dash under hood. Cars are not designated by yearly models but by a prefix letter such as H, J, M, O.

1920*	O	6	\$2600	5000 to 364999
	O	6	....	370000 to 389999
1921*	Super 6	6	2250	400000 to 499999

\*These numbers effective December 1, respectively.

1922	6	6	\$1645	....
1923	6	6	1375	....

Serial numbers are not designated on a yearly basis.  
Number on plate on front of dash.

**HUFFMAN**

Year	Model	Cyls.	Price	Serial Numbers
1919	W	6	\$1795	
1920	R	6	1995	1776 to 2814
1921	R	6	1795	2135 and up
1922	R	6	1395	

1923 production limited.  
Number on left front frame horn.

**HUPMOBILE**

Year	Model	Cyls.	Price	Serial Numbers
1914	H-A	4	\$1200	
	32	4	1050	40001-52000

Number on sector plate center of dash.

1915	K	4	\$1200	52001-60000
	N	4	1085	
1916	N	4	1185	
	NU	4	1340	
1917	N	4	1285	60000-87519
	NU	4	1440	
	N	4	1385	
	NU	4	1540	

Number plate on dash near speedometer.

1918	R	4	{ 1350	R1-R15000
			{ 1350	
1919	R	4	1335	
	R3	4	1450	R20001 up
1920	R-3	4	1685	29000 to 30000
	R-4	4	1685	30001 to 39999
	R-5	4	1685	40000 and up
1921	R	4	1485	47500-61100
1922	R	4	1250	61100-95000
1923	R	4	1175	95001 to 130000

Number on plate where steering column joins dash.

**INTERSTATE**

Year	Model	Cyls.	Price	Serial Numbers
1915	T	4	\$1000	7100-11503
1916	T	4	850	11504-14528
1917	T	4	850	14529-19108
1918	T	4	1000	19109 up

Discontinued. \* Number plate under front seat.

**JACKSON**

Year	Model	Cyls.	Price	Serial Numbers
1915	44	4	\$1135	
	48	6	1650	
1916	34	4	985	
	46	4	1375	
	34S	8	1195	
	6S	8	1685	

**JACKSON—Continued**

1917	34-A	4	985	
	348-A	8	1195	
	68-A	8	1685	
	349	8	1295	
	350	8	1195	
1918	349	8	1495	

Number plate on dash or on front seat heel board

1920	6-38	6	\$2150	25000 to 27842
1921	6-38	6	1950	

Number on end of front seat.

1922	6-38	6	\$1485	26392-26429
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1923 Production limited  
Number on right hand rear cross tube.

**JEFFERY**

Year	Model	Cyls.	Price	Serial Numbers
1915	Six	6	\$1650	47000-53999
1916	4-62	4	1000	57000-60500
	6	6	1350	68000-69500
1917	472	4	1095	61000-78000
	671	6	1465	86000-96000

For later models, see Nash.  
Number to left of front frame cross member.  
Discontinued.

**JONES**

Year	Model	Cyls.	Price	Serial Numbers
1915	1915	6	....	1-1999
1916	1916	6	....	2000-2999
1917	26-A	6	....	3000-5000
	26-B	6	....	

Year Model Cyls. Price Serial Numbers

1918	27-A, 29D	6	....	5001-6000
1919-20	27-A-E	6	....	6001 up

Number under the hood, on right side of cowl board, and stamped on ends of both front spring hangers.  
Discontinued.

**JORDAN**

Year	Model	Cyls.	Price	Serial Numbers
1917	60	6	\$1650	151-2157
1918	60	6	1995	3001 to 5049
1919	F	6	2775	5401 to 7250
1920	M	6	2450	10701 to 13500
1921	M	6	2250	13501 to 15491

Number under hood.

1922	MX	6	1795	20001 to 25000
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Number on left hand side of front cross member.

1923	MX	6	\$1675	25001 to 31700
1923	H	6	1995	35001 to 38000

**JEWETT**

Year	Model	Cyls.	Price	Serial Numbers
1922	6	6	\$1065	10000 up
1923	6	6	1065	....

Number on left side crankcase.

**KELSEY**

Year	Model	Cyls.	Price	Serial Numbers
1921	GWOV	6	\$1800	102-110
1922	G & B	4	985	1000-1016
			....	4000-4081
1923	G	4	1150	1017 to 1057

Number on left hand side of instrument board.

**KING**

Year	Model	Cyls.	Price	Serial Numbers
1915	C	4	\$1150	2201-3005
	D	8	1350	
1916	D	8	1350	4000-8000
	E	8	1585	12000-14950
1917	EE 1st Ser.	8	1650	16000-17800
	EE 2d Ser.	8	1650	18000-18099
1918	F	8	2150	20001-25000
1919	G	8	2350	3001-30629, 32976, 36378, 35022
1920	H	8	....	H-1, H-2001, H-4001 and H-5001 up

Numbers on dash plate, except 1915 models, which are on heel board under front seat.

1920	Touring	8	....	1000 to 2000
	Foursome	8	....	2001 to 4000
	Road King	8	....	4001 to 5000
	Limousine	8	....	5001 to 6000
1921	J	8	\$2725	JT1001 & KF3001
1922	K	8	1795	KT-3501 up
1923	L	8	1595	....

Number below cushion on heel board.

**KISSEL**

Year	Model	Cyls.	Price	Serial Numbers
1915	4-36	4	\$1450	16001-16575
	6-42	6	1850	25001-25455
1916	32-4	4	1050	30001-33001
	36-4	4	1250	16576-20000
	42-6	6	1485	25456—
1917	100 pt. 6	6	1195	38-101 up
	Double 6	12	2250	12-101 up
1918	100 pt. 6	6	1495	
	Double 6	12	2250	
1919	Cus. Bld.	6	2875	45-101 up
	Cus. Bld.	6	2450	45-200 up
1920	Cus. Bld.	6	3475	
1921	45	6	3475	
1922	45	6	1885	
1923	55	6	1585	100 and up



Year	Model	Cyls.	Price	Serial Numbers
1915	6-42A	6	\$1750	2100-2500
1916	6-36E	6	1095	3000-3599
1917	6-38F	6	1295	3600-4500
	6-38G	6	1395	4600-4999
1918	6-38GA	6	1495	5000-5800
1919	6-42	6	1855	6000-7000
1919-20	6-55-J	6	1955	7000 to 7999
			2290	7000 to 7999
1921	55-K	6	2290	
1922	6-55-K	6	1690	8000-8499
1923	6-60	6	1690	9000 and up

Year	Model	Cyls.	Price	Serial Numbers
1920	134	8	\$5625	1001 and up
1922	134	8	4850	

Number on front floor board.

1922	134	8	\$4090	1731-2284
1923	134	8	5000	

Number on front motor leg, right side.

Year	Model	Cyls.	Price	Serial Numbers
1921	999	6	\$5200	8000 to 975
1922	Production Limited.			

On instrument under hood.

Discontinued.

Year	Model	Cyls.	Price	Serial Numbers
1916	10-A	6	\$1095	30501-31500
1917	10-B	6	1195	31501-33500 approx.
1918	10-B	6	...	33501-36450
1919	10-B	6	...	36451-42250
1920	10-C	6	1985	50500 up

Numbers on left side front frame end; motor numbers, 21001 to 27001, on left side of motor.

1921	10-C	6	\$1795	54000-56000
1922	10-D	6	1395	56000-58400

1923 Production suspended

Number on left side frame channel just ahead of radiator.

Year	Model	Cyls.	Price	Serial Numbers
1915	4-K	4	\$1375	
	6-L	6	1875	
	6-M	6	2575	
1916	6-N	6	1875	

Number plate on dash, right side, under hood.

1917	6-O-16	6	\$1075	
	6-O-17	6	1185-1285	

Number plate on dash, right side under hood, and on top of fly-wheel housing.

1918	6-P	6	\$2875	
	O	6	\$1345	
	R	6	1585-1685	

Number plate on dash, right side under hood, left front spring and on left rear kick-up.

1919	R-19	6	\$1785	17296
1920	S	6	1885	18001 up
1921	S	6	1885	19001 and up
	T	6	2785	30001 and up
1922	S	6	2100	26548-26592
	T	6	2285	31120-31308
1923	23	6	1795	37251 and up

Number plate on dash under hood, on left front spring crown, left rear motor arm, and on right side of rear side rail.

Number on right front spring hanger.

Year	Model	Cyls.	Price	Serial Numbers
1915	A1 D1	4	\$2000	2016
	M1	6	2465	1551-1563
1916	O	6	2500	2500
1917	O	6	2510	2530
1918	Ser. 33	6	2550	2554

Discontinued.

Year	Model	Cyls.	Price	Serial Numbers
1920	...	8	\$4600	1 and up
1921	...	8	4300	835-3151
1922	...	8	3800	3152-8709

Number on front of dash on right side.

1923	8	8	\$3800	8710 and up
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Number on left side crankcase between No. 1 and No. 2 cylinders.

Year	Model	Cyls.	Price	Serial Numbers
1912	L	4	\$3500	
	M	6	4800	
1913	L	4	3600	
	R	6	4400	
	M	6	5100	
1914	58 RD & LD	6	4400	
	48 RD & LD	6	5100	
1915	38R-5	6	4400	
	48M-5	6	5100	(Decline to give serial numbers)
1916	38	6	4400	
	48	6	5100	
1917	38	6	4600	
	48	6	4600	
1918	38	6	5000	
	48	6	5950	
1919	38	6	...	
	48	6	...	
1920	38	6	...	
	48	6	...	
1921	...	6	8100	17001 and up
1922	48	6	8600	
	48	6	7600	18101 up
1923	48	6	7400	18101 and up

Number on right side of dash column.

Year	Model	Cyls.	Price	Serial Numbers
1920	20T	4	\$1575	999 to 9999

Number on dash.

1921	21T	4	\$1665	999 and up
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Discontinued.

Year	Model	Cyls.	Price	Serial Numbers
1917	A	4	\$ 830	1-500

Number plate on dash or under front seat.

1918	B	6	\$1290	501-2350
1919	B	6	1395	2351-6200
1920	B	6	1495	6300 to 8299

Number plate on left side engine. Engine number same as car number.

Discontinued. Name changed to Courier.

Year	Model	Cyls.	Price	Serial Numbers
1912	26	6	\$2100	500-1000
1913	27	6	2590	3000-4000
1914	65	6	2900	4000-6000
1915	77	6	2900	6000-7000
1916	107	6	2900	9000-10000
1917	127	6	3200	10000-11000
1918	127	6	3900	
			4300/18000 up	
1919	127	6	...	19000-19999
1920	142-151	6	4800	20000 to 21000
1921	21	6	6300	
1922	TV	6	6300	21000-21500
1923	TV	6	5600	21500 to 22000

Number plate on dash and on right frame horn.

Year	Model	Cyls.	Price	Serial Numbers
1914	41	6	\$3250	114002-814000
	48	6	5000	114002-1814000
1915	41	6	3250	15002-815000
	48	6	5000	1215002-1815000
1916	41	6	3250	116002-816000
	34	6	2750	1516002-1816000
1917	34	6	3100-	
			5500	317002-817000
1918	34	6	3550-	
			6500	418002-818000
1919	34	6	3950-	
			5750	419001-819001
1920	34	6	4650-	
			6450	12200001-8200001
1921	34	6	3985	12200001 to 122200001
1922	34	6	3185	
1923	34	6	3185	

Numbers on heel board of driver's seat and on left side of main frame.

Serial numbers run according to body style and not consecutively.

Year	Model	Cyls.	Price	Serial Numbers
1915	25	4	\$ 695	

Gas Light

			750	14001-52000
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Electric Light

1916	25	4	655	52001-113205
1917	25 7-1-16	4	595	
	1-1-17	4	635	113206-193800
	1-1-17	4	665	
1918	25 7-1-17	4	655	
	8-6-17	4	745	193801-239822
	3-1-18	4	825	
1919	25 7-1-18	4	825	
	10-4-18	4	895	239823-266800
1920	25 7-1-19	4	895	
	7-12-19	4	985	266801 up
1921	25	4	845	329691 and up
1922	25	4	885	341701-388529
1923	25	4	885	388530

Number plate on front of driver's seat.

Year	Model	Cyls.	Price	Serial Numbers
1915	22-70	4	\$3000	2099-2549
1916	22-72	4	3000	2550-3299
1917	22-73	4	3500	3300-4099
1918	Series 4	4	4200	
			4500	4100-4600
1919	Series 5	4	4200	
			4500	4600 up
1920	Series 5	4	4950	9001 and up
1921	Series 5	4	4500	12000-16500
1922	Series 5	4	3950	16500-19640
1923	Series 5	4	3950	19641 and up
1923	Series 6	6	3750	20240 to 20258

Number on right hand rear spring hanger.

Year	Model	Cyls.	Price	Serial Numbers
1920	R	4	\$5000	625 and up

Number attached to clutch.

1921	R & RR	4	5500	
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Discontinued.

Year	Model	Cyls.	Price	Serial Numbers
1916	25	4	\$ 600	36381-40248
1917	25	4	545	
1918	25	4	685	40249-44552
1919	Master Six	6	1095	45015-47508
1920	Master Six	6	1995	50646 to 51527

Number same as motor number and is found on side of motor.

1921	M-6	6	\$1995	
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Discontinued.

Year	Model	Cyls.	Price	Serial Numbers
1915	B-35	4	...	50001-51800
	B-45	6	...	55001-56000
	B-48	8	...	57001-57100

Number plate on heel board of front seat on right engine guard, and on left front frame member.

1916	B-48	8	...	58000-60000
	C-42	6	...	60001-64905
1917	C-42	6	...	65001-69956
	D-40	6	...	70000-85000
1918	C-42	6	...	90000-95000
1919	E-42	6	...	95501-96495
1920	E-40	6	\$1475	97001 to 106400
	E-42	6	1675	95501 to 96500
	F-40	6	1750	1 and up
	F-42	6	1995	12001 and up
1921	F-40	6	1790	7001 and up
	F-42	6	1995	12901 and up
1922	F-50	6	1490	30000 up
1923	F-50	6	1590	30000 and up

Number on toe board. Serial numbers not carried under yearly designations.

Year	Model	Cyls.	Price	Serial Numbers
1915	MK-40	4	\$1375	6001-6250
1916	MK-40	4	1450	6250-7012
1917	G-50	4	1840	8000-8330
	C-40	4	1495	9000-10999
1918	G-50	4	2250	8331-8450
	L-40	4	2000	11000-11220
			2500	
1919	G-50	4	2250	8451-8999
	L-40	4	2000	
			2500	11221-11600

Name changed to R & V Knight in December, 1919. Name on dash plate and on front left side of engine. Discontinued.

Year	Model	Cyls.	Price	Serial Numbers
1920	M	6	\$1575	3316 to 4200

Number on end of right side.

Discontinued.

Year	Model	Cyls.	Price	Serial Numbers
1919	S-9	4	\$1295	16609
1920	S-9	4	1195	15599 to 18374
1921	S-10	4	1195	
1921	S-10	4	1295	
1922	S-11	4	950	18665-18989
1923	S-10	4	950	19000 and up

Number under hood right side of dash.

Year	Model	Cyls.	Price	Serial Numbers
1915	2	4	\$ 495	501 up
1916	4	4	1095	8000 up
1917	3	4	565	4001 up
	6	4	1095	9151 up
1918	M-4	4	995	

Discontinued.

Year	Model	Cyls.	Price	Serial Numbers
1915	4-38	...	...	14451-14500
	6-30	...	...	70000-70242
	6-40	...	...	61531-61953
	6-50	...	...	41354-41891
1916	6-30	...	...	70245-70666
	6-43	...	...	70667-71087
	6-44	...	...	62053-62252
	6-66	...	...	62253-66564
1917	6-43	...	...	71088-71393
	6-45	...	...	71394-71819
	6-66	...	...	66565-66884
	6-36	...	...	36000-36225
1918	6-36	...	...	36226-36996
	6-66	...	...	36000-36225
	6-66	...	...	66885-67043
1919	6-46 Victory	...	...	46001-47551
	6-66	...	...	67044-66078
1920	6-48	6	\$1885	48001 to 49317
	6-68	6	...	68101 to 68286
1921	6-48	6	2185	68286 and up
1922	6-40	6	1295	40001-44748
	6-58	6	1785	58001-58474
1923	6-40	6	1295	44700 and up
1923	6-58	6	1785	58500 and up

Number on dash.

Year	Model	Cyls.	Price	Serial Numbers
1919	30	4	\$ 895	1600
			4	995 7000/8149
			4	

**NASH—Continued**

1921	681-7	6	\$1545	188437 to 195753
1922	682	6	1695	181130 to 208440
1922	41-4	4	1195	1345 to 7193
1922	601	6	1390	195754 up
1922	41-4	4	985	4511 up
1923	41	4	935	19436 and up
1923	601	6	1240	256987 and up

On the 6-cyl. models the numbers do not run consecutively but by body styles.  
Number on left front cross member, just back of radiator.

**NATIONAL**

Year	Model	Cyls.	Price	Serial Numbers
1914	6-W	6	\$2375	9001-10100
1915	AA	6	2375	10101-11100
1915-16	AB	6	2500	11101-14000
1916	AC	6	1690	14001-16000
	AD	12	1990	16001-17000
1917	AE	6	1750	17003-18000
	AH	12	2150	18001-20000
	AF-1	6	1995	20001-24000
	AF-2	6	2150	24001-25000
	AK-1	12	2595	25001-25550
1918	AK-2	12	2750	25551-27000
	AF-3	6	2150	27001-28000
1919	AL	6	2450	28001-28979
	AM	12	3050	32000-32148
1920	BB	6	3290	60000 up
	Sextet (6)	6	....	32149 and up
1921	BB	6	2990	....
1922	BB	6	2475	60001 up
1923	BB	6	2475	63001 and up

The serial number on the left side of the frame, either under the front or rear fender.

**NELSON**

Year	Model	Cyls.	Price	Serial Numbers
1917	A	4	\$1800	1001-1082
	BB	4	1290	1004-1125
	C	4	1400	1059-1101
1918	D	4	1450	1112-1187
1919	D	4	1500	1188 up
1920	D	4	1700	1213 to 1500
1921	D	4	1900	....

Number on dash plate; engine number top of right front crankcase arm.  
Discontinued.

**NOMA**

Year	Model	Cyls.	Price	Serial Numbers
1920	1	6	\$2900	300 to 600
1921	1C	6	3200	600 and up
1922	3C	6	2100	2000 and up
1923	4C	6	2500	3000 and up

Number on front spring.

**NORWALK**

Year	Model	Cyls.	Price	Serial Numbers
1920	4-30	4	....	9000 to 9872
1921	430KS	4	\$1135	3040 and up

Number on dash.  
Discontinued.

**OAKLAND**

Year	Model	Cyls.	Price	Serial Numbers
1915	37	4	\$1200	370000-373599
	49	6	1685	490000-499500
1916	32	6	795	320000-328000
				330000-347100
	38	4	1050	380000-384001
1916-17	50	8	1585	500000-502000

Number on heel board of driver's compartment, or on left rear cross frame member.

1917	34	6	\$ 875	134-3000034
1918	34-B	6	1185	3000134 up
1919	34-B	6	1075	1169934
1920	34-C	6	1165	11700134 to 15235634

1918 number on heel board; 1919 on heel board and on right rear side member.

1921	34-C	6	\$1145	15235634 to 16755034
1922	34-D	6	1145	11700134-16755034

Number on frame opposite left rear wheel.

1923	6-44	6	\$ 995	1025144 to 4115244
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Number on frame opposite right rear wheel.

**OLDSMOBILE**

Year	Model	Cyls.	Price	Serial Numbers
1915	42	4	\$1265	84500-92499
	55	6	2975	92500-92999
1916	43	4	1095	93000-99999
	43	4	1095	109000-109499
	44	8	1195	....
				1775-109500-118782
				1850
1917	45	8	1775	....
				1295
				1850-119000-135276
				1367
	45	8	1295	143000-144500
				.... 148900-148925
	37	6	1095	150000 up
				1675-192000-200000
				1295
1918	45A	8	1700	135277-142999
				145000-149999
1919	37A	6	1395	37AT1 & 37AT1 up
				1895 37AS1 & 37AC1 up
	45B	8	1895	45BT1, 45BP1 & 45BS1 up

**OLDSMOBILE—Continued**

1920	45-B Touring	8	1395	45-B-T-1 to 45-B-T 8297
	45-B-P (Sport)	8	....	45-B-P-1 to 45-B-T 3062
	45-B-R-T Tour.	8	....	45-B-R-T-1 to 45-B-R-T 599
1921	45-B Sedan	8	....	45-B-S-1 to 45-B-S 1032
	43A	4	1445	7 to 10786
	47	8	1695	1 to 1990
1922	46	8	2100	49 to 625
	47	8	1735	....
	47	8	1595	....
	42A	4	1145	....
1923	43A	4	975	43AT1 and up
1923	47	8	1375	47T1 and up

Numbers on right, on cowl under hood on brass plate.  
Numbers do not run in consecutive order, but according to body styles.

**OVERLAND**

Manufacturers do not wish to publish any data of this description. For information, write Willys-Overland, Inc., Toledo, Ohio.

**PACKARD**

Year	Model	Cyls.	Price	Serial Numbers
1912	30	4	\$4200	20001-23000
	48	....	....	23001-26000
	18	4	3200	26001-27000
1913	48	6	4850	35026-38000
1914	1-38	6	4150	38000-42000
	48	6	4850	50026-52000
	2-38	6	3350	53026-56000
	48	....	....	63026-66000
1915	3-38	6	3750	75026-76999
	5-48	6	4850	78026-78586
1916	1-25	12	2750	80026-87787
	1-35	12	....	125051-150000
	2-25	12	....	....
1916	2-35	12	....	....
1917	2-25	12	3050	....
	2-35	12	3500	....
1918	3-25	12	3700	150051 up
	3-35	12	4100	....
1919	3-25	12	3950	....
	3-35	12	4300	....
1920	Twin Six	12	5550	160130 to 165662

Number on right front leg of motor.

1921	Single Six	6	\$2975	U26 to 8850
	Twin Six	12	6000	S20000 and up
1922	Single Six	6	2485	U9000 up
	Twin Six	12	3850	S21000 up

Number on plate on dash directly back of change speed lever.

1923	126	6	\$2585	M-25000 and up
1923	136	8	3650	200000 and up

Number on plate at left rear side of dash.

**PAIGE**

Year	Model	Cyls.	Price	Serial Numbers
1914-15	36	4	\$1075	14000-20000
	46	6	1395	55000-59999
1915-16	36	6	1095	80000-81500
	46	6	1295	60000-66000
1916-18	46	6	1375	65600-69999
	38	6	1090	85000-89923
1917-18	39	....	1330	89924-101999
1918	39	6	1395	102001 up
	39	6	1690	102001 up
1917-18	51	6	1495	70000-74999
	55	6	2060	75000-79500
1919	55	6	2060	82001 up
	55	6	2165	82001 up

Number plate under left front seat cushion.

1920	15-19	6	\$1595	200000 and up
	M-18	6	2195	118000 and up

Serial and motor numbers are together on the left side of motor.

1921	6-42	6	\$1635	211903 to 217507
	6-66	6	2875	126314 to 130948
1922	6-44	6	1465	217480 up
	6-66	6	2245	130950 up
1923	6-70	6	2450	....

Number under right hand front seat.

**PAN-AMERICAN**

Year	Model	Cyls.	Price	Serial Numbers
1918	E-6-48	6	\$1800	500-1200

Number on frame horn.

1919	E-6-48	....	....	3000-3322
	F-6-48	6	....	....
	G-6-48	6	....	....
1920	E-6-55	6	2250	3000 and up.

Number on left front spring hanger.  
Discontinued.

**PATERSON**

Year	Model	Cyls.	Price	Serial Numbers
1915	6-48	6	\$1400	1000-1101
	4-32	4	1200	X100-X573
1916	6-42	6	995	301-1302
1917	6-45	6	....	5001-6986
1918-19	6-46	6	....	6869-9504
1920	6-47	6	....	1201 up
				12101 up
	6-50	6	2100	1500 and up
	6-50	6	2130	....
	6-50 Sedan	6	3300	18000 and up
	Coupe	6	3300	18100 and up.
1921	6-50 6 Touring	6	1925	15000-15690
	Sedan	6	2895	18001 and up
1922	6-52	6	1550	....
1923	6-52	6	1390	....

Number on left side of seat.

**PATHFINDER**

Year	Model	Cyls.	Price	Serial Numbers
1915	....	....	\$2222	....
				2750 2002-2566
1916	Six	6	1695	....
	Twelve	12	2475	2901-4175
1917	3-B	12	2750	8001-17525

Number on dash plate.  
Discontinued.

**PEERLESS**

Year	Model	Cyls.	Price	Serial Numbers
1914	36	6	\$5000	142001-142589
	37	6	6000	143001-143058
1915	36	6	5000	152001-152100
	54	4	2000	DD101-DD2500
	55	6	2250	EE101-EE5000
1916	Series 1	8	1890	16001-169000*
1917	Series 2 & 3	8	1890	170001-179000
1918	Series 4	8	2340	230001 up

\*To March 21.  
1919 Series 5 8 2900 260000 to 266000  
1920 Series 6 8 ....

Since 1916 series models instead of yearly models adopted.  
Number on dash.  
1921 56-S-7 8 \$2990 270000-273687  
1922 56-S-7 8 2790 271000-273787  
1923 66 8 2990 A-1 and up

Number on metal plate attached to dash.  
Numbers run according to body styles, and not consecutively.

**PIEDMONT**

Year	Model	Cyls.	Price	Serial Numbers
1917	4-30	4	\$1095	1-400
	6-40	6	1545	400-500
1918	4-30	4	1095	500-1000
	6-40	6	1545	1000-1200
1919	4-30	4	1235	1200-2500
	6-40	6	1685	2500-3000

After Dec. 15, 1919, number on main floor board.  
1920 4-30 4 \$1395 1800 to 3000  
6-40 6 1695

Number on dash.  
Discontinued.

**PIERCE-ARROW**

Year	Model	Cyls.	Price	Serial Numbers
1912	36 H. P.	6	\$4000	32200-33200
				9199-9201-57
	48 H. P.	6	5000	9259-9321, 9323-9522
	66 H. P.	6	6000	....
1913	38-C	6	4300	33301-34050
	48-B	6	5000	10301-11125
	48-D	6	5000	....
	48-D2	6	5000	....
	66-A1	6	6000	66601-66800
1914	38-C2	6	4300	34101-34603 and 34047
	48-B2	6	5000	11201-12100 and 11100
	66-A2	6	6000	66900-66964
1915	38-C3	6	4300	34701-35450
	48-B3	6	5000	12301-13050
	66-A3	6	6000	67050-67150
1916	38-C3	6	4300	35601-36350
	48-B3	6	5000	13051-13650
	66-A3	6	6000	67050-67150
	38-C4	6	4300	36601-37605
	48-B4	6	5000	13901-14900
	66-A4	6	6000	67201-67405
1917	38-C4	6	4300	37701-38701
	48-B4	6	5000	15001-16000
	66-A4	6	6000	67499-67900
1918	48-B4	6	5000	16001-16400
	48-B5	6	6500	16401-17400
				511001-51137



**PREMIER**

Year	Model	Cyls.	Price	Serial Numbers
1915	6-50	6	\$3700	85150-1615000
1916	6-51	6		
1917	6B	6	3200	10001-2912
1918	6C	6	3200	
1919	6C	6	3200	3501-4511
1920	6D	6	4600	5011 and up
1912 to 1916, inclusive, number left frame member, center and near step hanger.				
1921	6-D	6	\$3690	5001-6799
1922	6-D	6	3100	6800-6845
1923	D	6	2585	6845 and up

Number under front cushion on left side right of starting crank on front cross member, and on front spring hanger.

**PREMOCAR**

Year	Model	Cyls.	Price	Serial Numbers
1921	6-40A	6	\$1295	
1922	6-40	6	1095	
1923	6-40	6	1095	

**RANGER**

Year	Model	Cyls.	Price	Serial Numbers
1920	A-20	4		1001 to 13000

Discontinued.

**REGAL**

Year	Model	Cyls.	Price	Serial Numbers
1915	D	4	\$1085	10171-11254
1916	E	4	650	3074-3525
	D	4	985	11255-11550
	F-8	8	1200	244-550
1917	J	4	695	24382 up

Number on left hand frame member at spring.

**R. & V. KNIGHT**

Year	Model	Cyls.	Price	Serial Numbers
1920	J	6	\$3150	20000 to 20700
1921	J	6	3350	20701 to 21000
1922	R	4	2150	50000 to 50700
1923	J	6	2750	21001 to 21999
1922	R	4	1850	50701 to 50999
1923	J	6	2475	22000 to 22050
1923	R	4	1665	51000 to 52000
1923	H	6	2850	22051 to 22450

Number plate on dash or on right or left hand side of motor.

**REO**

Year	Model	Cyls.	Price	Serial Numbers
1915	R-5, S-5, L	4	\$1050	64001-76000
	M	6	1385	101-2100
1916	R-5, S-5	4	875	76001-96000
	M, N	6	1250	2101-10200
1917	R-5, S-5	4	875	96001 up
	M, N	6	1150	10201 up
1918	M	6	1385	20100 up
1920	T-6 Touring	6	1750	
	T-6 Sedan	6	2750	12001 and up
	U-6 Roadster	6	1750	
	U-6 Coupe	6	2750	
1921	T-6	6	1850	
1922	T-6	6	1595	37800-49500
1923	T-6	6	1335	49500 and up

Number on right forward end of sub frame.

**REVERE**

Year	Model	Cyls.	Price	Serial Numbers
1920	C-D	4	\$4250	
1921	C	4	4650	
1922	C	4	3200	1600-1653
1923	M	4	3200	1660 and up

Number on left side front cross members.

**RICKENBACKER**

Year	Model	Cyls.	Price	Serial Numbers
1922	A	6	\$1485	1-5000
1923	B	6	1485	5001 to 13595

Number on plate at heel board, left side.

**ROAMER**

Year	Model	Cyls.	Price	Serial Numbers
1916	All			10500-13500
1917	All	6		13501-15750
1918	All	4&6		13751-16970
1919	All	6		16971 up
1921	654-E	6	\$2650	
Number on dash board.				
1922	6-54E	6	2585	23020-24644
	4-75E	4	3585	23020-24644
1923	654-E	6	2485	
1923	475-E	6	3485	

Serial numbers do not run consecutively.

Number on front right side rail.

**ROCK FALLS**

Year	Model	Cyls.	Price	Serial Numbers
1920	12	6		12001 and up

Number over motor's manufacturing plate.

Discontinued.

**ROLLS ROYCE**

Year	Model	Cyls.	Price	Serial Numbers
1922	40-50	6	\$10900	
1923	40-50	6	10900	

Serial numbers strictly confidential, refer factory, Springfield, Mass.

**ROSS**

Year	Model	Cyls.	Price	Serial Numbers
1916	A	8	\$1350	1003-1495
1917	C	8	1550	1496-1721

Discontinued.

**SAXON**

Year	Model	Cyls.	Price	Serial Numbers
1915	A	4	\$395	100-9740
	A-2	4	395	101-519
	B	4	395	10102-15082
	B-2	4	395	342-735
	S	6	785	101-4843
1915-16	14	4	395	101-9574
	S-2	6	835	5101-19199
	S-2-R	6	835	101-2100
1917	B-5-R	4	495	9601-X20543
	B-6-R	4	495	X1-X128
	B-7-R	4	495	X790-X1222
1917-18	S-4-T	6	1045	19201-X40602
	S-4-R	6	995	2101-X5192
	S-4-S	6	1350	30700-X42973
1918	Y-18-R	6	1195	101
	Y-18-T	6	1195	1201
1919	Y-18-T	6	1295	7650 up
	Y-18-R	6	1295	1031 up
1920	125	6	1195	90001 and up

Number on top of the left hand frame side bar next to radiator.

Discontinued.

**SAYERS**

Year	Model	Cyls.	Price	Serial Numbers
1918	P	6	\$1695	5100-5300
1919	A-P	6	1745	5301-5700
	B-P	6		
1920	C-P	6	2095	5701 to 6000
	D-P	6	2195	6001 to 6600
1921	D-P	6	2195	6350-7000
1922	D-P	6	1695	7001-7100
1923	D-P	6	1695	7101 to 7413

Number on cowl under hood.

**SCRIPPS-BOOTH**

Year	Model	Cyls.	Price	Serial Numbers
1915	C	4	\$775	101-3100
1916	C	4	825	3101-7260
	D	8	1175	101-800
1917	C	4	935	7261-8146
	D	8	1285	801-1807
	G	4	935	6-800
1918	G	4	1065	801-1800
	H	8	1285	2-325

Number plate on heel board, right hand seat.

6-39 6 \$1295 9001-11599

6-40 6 1295 9002-11599

6-41 6 1985 11432-11599

6-42 6 1985 11434-11599

Number plate on seat board under front seat cushion.

1919 G 4 \$1065 1801-3000

6-39 6 1295 11600

Number plate on right seat heel board.

6-40 6 \$1295 11600-18759

6-41 6 1985 11600-12432

6-42 6 1985 11600-16419

A-41 6 2175 16420 up

A-42 6 1995 18410 up

1920 B-39 6 1425

E-40 6 1425 20250-29360

B-41 6 2175

E-42 6 2295

Serial numbers under cushion of front seat.

1921 B-39-42 6 \$1295 29360 and up

Discontinued.

**SENECA**

Year	Model	Cyls.	Price	Serial Numbers
1917	A	4	\$735-\$850	500-1000
1918	D	4		1000-2000
1919	H	4		
1920	L	4	1185	
	O	4		2001 up
	M	4		

1921 L & O 4 1045 2420-2909

1922 50, 51 4 1095 3001-3900

1923 51-C 4 985 4001 and up

Number on dash and under hood and on left frame rail in front of radiator.

**SINGER**

Year	Model	Cyls.	Price	Serial Numbers
1915	15	6		751-760
1916	16	6		7601-7784
1917	17	6		7785-7795
1918	17	6		77903-77904
1919	19	6		19000-19940
1920	20	12		20101 up

Number on front spring, front horn bracket.

Discontinued.

**SKELTON**

Year	Model	Cyls.	Price	Serial Numbers
1920	35	4	\$1245	500 up
	35	4	1295	500 up
1921	35	4	1295	

Discontinued.

**STANDARD**

Year	Model	Cyls.	Price	Serial Numbers
1916	E	8	\$1850	175-519
				2100
1917	F	8	2450	C100-590
1918	G	8	2750	600-1099
1919	H	8	2750	1100-1599
1920	I	8	3400	1600-3605
1921	J	8	3400	
1922	98	8	2500	10000 up
1923	99	8	2500	10000 and up

Number plate on dash; engine numbers on up crankcase.

Discontinued.

**STANLEY**

Year	Model	Cyls.	Price	Serial Numbers
1915	720 & 721	2	\$1975	15001-15999
1916	725, 726	2	2200	16001-16999
	727, 728			
1917	728 & 730	2	2200	17001-17999
1918	735 & 736	2	2800-	
			3740	18001-18999
1920	735	2	4275	19001-19999
	735-A	2	4275	
	735-B	2	4275	19424-20251
	735-C	2	5975	
	735-D	2	5775	
1921	735	2	2600	21001 and up
1922	740	2	2700	22001-22115
				22201-22447
1923	740	2	2750	23000 and up

Number on name plate on chassis frame.

**STANWOOD SIX**

Year	Model	Cyls.	Price	Serial Numbers
1921	6	6	\$2050	
1922	6	6	1765	

Discontinued.

**STAR**

Year	Model	Cyls.	Price	Serial Numbers
1922	4	4	\$348	1 and up
1923	4	4	443	

Number on dash under hood.

As Star cars are numbered by manufacturing zones, it is best to obtain serial numbers from Durant Motor Co., Long Island City, N. Y.

**STEARNS-KNIGHT**

Year	Model	Cyls.	Price	Serial Numbers
1915	L-4	4	\$1750	L1-L702
	Six	6	5000	9000-9109
1916	Four	4	1395	L703-L2800
	Eight	8	2050	10000-10900
1917	32	4	1450	L2801-L4800
	33	8	2150	10901-12000
1918	4	4	1785	4745-5900
	8	8	2575	12079-12350
1919	L-4	4	2250	L5901-L7102
	8	8	2700	12351-12404
1920	SKL4	4	2350	L7103 up
1921	SKL4	4	2450	
1922	SKL4	4	2250	L13400 up
	6	6	2700	
1923	SKL4	4	2250	L14694 and up
1923	SKL6	6	2700	S1 and up

Number on first floor board near right side.

STUTZ	Model	Cyls.	Price	Serial Numbers
Year				
1915	HCS	4	\$1475	Series F
	4-F	6	2275	
	4-F	6	2525	
1916	4-C	4	2300	Series C
1917	4-R	4	2550	Series R
1918	4-S	4	2750	Series S
1919	Data not available.			
1920	H	4	3100	5001 to 9002
1921	H	4	3350	
1922	DH	4	2990	12001-13129
1923	KLDH	4	2790	13129 and up
1923	6	6	1995	601 and up

TEMLAR	Model	Cyls.	Price	Serial Numbers
Year				
1918	A-4-45	4	\$2185	1 to 125
1919	A-4-45	4	2485	126 to 1200
1920	A-4-45	4	2685	1201 to 2750
1921	A-4-45	4	2385	2751 to 3600
1922	A-4-45	4	2125	3601 to 6290
1923	A-4-45	4	2125	6291 and up

TULSA	Model	Cyls.	Price	Serial Numbers
Year				
1917	D	4	\$1150	3000-3400
1918	D	4	1200	3000-3400
1919	D	4	1200	3000-3500
1920	E	4	1335	4000 up
1921	E 1-3	4	1385	
1922	...	4	1175	
1923	Production limited.			

VELIE	Model	Cyls.	Price	Serial Numbers
Year				
1915	11	4	\$1500	32101-32500
	12	4	1750	17301 to 19251
	14	6	2015	19301-19451
	15	6	1595	19500-20690
1916	22	6	1065	35000-39000
1917	27	6	1600	40000 to 40472
	28	6	1185	50000 to 57844

VELIE—Continued	Model	Cyls.	Price	Serial Numbers
Year				
1918	38	6	1440	50000 to 68506
	39	6	1695	40000 to 40987
1919	38	6	1685	
	48	6	...	69001 up
1920	48	6	1985	70001 and up
	34	6	1585	110001 to 116550
1921	48	6	1885	70000 to 81300
	34	6	1485	110000 to 116550
1922	48	6	1585	69000-81300
	34	6	1235	110000-116550
	58	6	1395	120000 up
1923	58	6	1275	127000 and up

WASHINGTON	Model	Cyls.	Price	Serial Numbers
Year				
1922	C	6	\$1785	1-125
1923	Production limited.			

WASP	Model	Cyls.	Price	Serial Numbers
Year				
1920	201	4	...	2011 and up
1921	2611	4	\$5500	

WESTCOTT	Model	Cyls.	Price	Serial Numbers
Year				
1915	O-35	4	\$1185	1103-1348
	U-50	6	1585	1500-1699
1916	41	6	1295	4001-4200
	42	6	1445	4201-5100
	51	6	1595	4599-5402
1917	17	6	1590	5501-6292

WESTCOTT	Model	Cyls.	Price	Serial Numbers
Year				
1918	S-18	6	1890	6293-7200
	18-A	6	2290	7201-8088
1919	A-48	6	2590	8101-8904
	A-38	6	1775	10001-10402
	B-38	6	2390	11001-11801
1920	C-38	6	2390	13001 up
	C-48	6	2890	20001 up

WESTCOTT—Continued	Model	Cyls.	Price	Serial Numbers
Year				
1921	C-48	6	\$2990	20800-21050
	C-38	6	2290	13750-14550
1922	C-48	6	1890	20001 up
	A-44	6	1890	16001 up
1923	B-44	6	1690	24200 and up
1923	D-48	6	1990	22000 and up

WILLS STE. CLAIRE	Model	Cyls.	Price	Serial Numbers
Year				
1921	A-68	8	\$3200	1 to 1500
1922	A-68	8	2475	1551-6000
1923	A-68	8	2475	6000 to 7480
1923	B-68	8	2875	10000 to 10174

WILLIS-KNIGHT	Model	Cyls.	Price	Serial Numbers
Year				
1918-19	89	6	...	1-12000

WILLIS-SIX	Model	Cyls.	Price	Serial Numbers
Year				
1918-19	89	6	...	1-12000

WINTHER	Model	Cyls.	Price	Serial Numbers
Year				
1920	61	6	...	61001 and up
1921	61	6	\$2750	

WINTON SIX	Model	Cyls.	Price	Serial Numbers
Year				
1920	25	6	\$4250	35675 to 35707
	25	6	...	155 to 2675
1921	25	6	4800	2676-2999
1922	40	6	3400	3000-3689

## C. A. F. A. Tables Show Gains in Motor Chattel Mortgages

CHICAGO, May 12.—Chattel mortgage totals on the books of the Central Auto Finance Association as well as registration figures supplied by the office of the city license collector fail to give evidence of slow business for the first four months of the year on the part of local automobile dealers. On the contrary figures compiled by these two offices suggest that automobile sales are holding up well.

Cook county chattel mortgages on automobiles listed by the Central Auto Finance Association for five successive weeks ending May 3, numbered 3,583 compared with 3,165 for the five weeks ending March 29. Totals for the weeks ending May 3 and April 26 are nearly double any other week in May, showing perhaps the difference in somewhat improved weather conditions.

If registrations are of any prophetic value License Collector Keane says 1924 should be a banner year for automobile sales in this county. Never before, remarks Mr. Keane, has there been such a large proportion of the previous year's registration so early in the year. The figures tell their own story:

Registrations from Jan. 1, 1924 to April 30, 1924.	Registrations For all of 1923.
Motorcycles .....	1,283 2,211
P. Cars 35 h.p. or less.....	202,544 213,440
P. Cars over 35 h.p.....	5,087 5,551
Trucks ton or less.....	25,671 26,145
Trucks, over 1 ton.....	14,469 13,907
Demonstrators .....	1,354 1,355
Transfers .....	1,125 2,841

## "Largest in World" 25 Years Ago

TOLEDO, May 12.—The following item appeared in the 25 years ago column of a local newspaper:

"The plant of the Pope Motor Car Company on Central avenue is now the largest automobile factory in the world.

"There are 450 men employed in the shops and among the Toledoans who drive Pope cars are J. K. Secur, A. Chesbrough, F. W. Whipple, Ed Marshall, E. H. Close, John Kelting, Dr. Hull, G. A. Haag, Walter Braun, N. O. Hartman, Frank Hake and T. E. McCaskey."

A number of the men mentioned as drivers of the old Pope cars are still active in business life of the city.

## Rams Trounced by Red Dogs in St. Louis Ford Sale Contest

ST. LOUIS, May 12.—A sales contest between Ford dealers in St. Louis which started last fall and just recently ended resulted in a victory for the "Red Dogs," or Ford dealers with establishments to the north of Olive street, over the "Rams," Ford dealers whose places are in the district south of Olive street. The Ford branch here kept the score. The losers, under the terms of the contest, will entertain the whole Ford organization in Metropolitan St. Louis at a banquet May 16 at Hotel Statler.

## Comfort Tires Is What They Call Balloon Type in Europe

ST. LOUIS, Mo., May 12.—Russell E. Gardner, Jr., president of the Gardner Motor Car Co., has returned from a four weeks' stay in Europe where he went for the purpose of studying conditions in the automobile business.

Mr. Gardner studied factory conditions in London, Paris, Lyons and Brussels and also observed the use of automobiles on European streets and highways.

One of the things to which his notice was called was the lack of use of balloon tires. They are called "comfort tires" in Europe now and have been adopted as optional equipment on only some of the larger cars.

"Four-wheel brakes are becoming increasingly popular," said Mr. Gardner, "and outside of England, it is practically impossible to find a car with such equipment, especially any car that weighs more than 3000 pounds. From their experiences with four-wheel brakes extending over a period of 20 years, Europeans have about reached the conclusion that the only practical durable type are of the mechanical variety."

## INCREASE TRUCK OUTPUT

SPRINGFIELD, O., May 12.—Production has been increased at the Springfield works of The International Harvester Company from twenty-five to thirty-five light auto trucks a day. A number of good sized orders have been received from Australia. The Springfield works is now several hundred auto trucks behind shipping orders.



# COMING MOTOR EVENTS

## AUTOMOBILE SHOWS

Chicago	Jan. 24-31, 1925	National Automobile Chamber of Commerce.
Detroit	May 19-23	Automotive Maintenance Equipment Show under auspices of N. A. C. C. and allied organizations, S. A. Miles, Manager.
Green Bay, Wis.	Aug. 25-30	Automotive Division, Association of Commerce, W. F. Kerwin, Manager.
Kansas City, Mo.	Feb. 7-14, 1925	Kansas City Motor Car Dealers' Association Show.
Milwaukee, Wis.	Aug. 25-30	Milwaukee Automotive Dealers' Association, Fall Show, Bart L. Ruddle, Manager.
New York	Jan. 3-10, 1925	National Automobile Chamber of Commerce.
Reno, Nev.	June 14-21	Annual State Exposition under auspices of Reno Motor Car Dealers' Assn.
Sacramento, Cal.	Sept. 1-10	State Agricultural Society, C. E. Paine, Manager.
Toronto, Ont.	Aug. 23-Sept. 6	Canadian Automotive Equipment Association and the Automotive Industries of Canada, Gib Robertson, Secretary.

## FOREIGN SHOWS

London, Eng.	Oct. 16-25
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## CONVENTIONS

Albuquerque, N. M.	May 26-31	U. S. Good Roads Exhibition.
Chicago	June 5	National Association of Regrinders.
Chicago	June 2	Convention of National Motor Regrinders and Rebuilders Association.
Detroit	May 21-24	International Motor Transport Congress of N. A. C. C.

## RACES

May 16-17	Los Angeles to Yosemite	Curry Camping Co.	414 Miles
May 17-28	El Paso, Texas	El Paso Herald	2,000 Miles
May 30	Indianapolis, Ind.	Ind. Speedway Assn.	500 Miles
May 30	Rochester, N. Y.	Horace P. Murphy	Short Races
May 30	ByBerry, Pa.	Jay Nichols	Short Races
May 30	Bloomsburg, Pa.	Jay Nichols	Short Races
May 30	Pottsville, Pa.	I. D. Kirschner	Short Races
June 14	Altoona, Pa.	Altoona Speedway Assn.	250 Miles
July 4	Kansas City, Mo.	K. C. Speedway Assn.	250 Miles
July 4	Abilene, Texas	West Texas Fair	Short Races
Sept. 1	Altoona, Pa.	Altoona Speedway Assn.	250 Miles
Sept. 1	Colorado Springs, Colo.	Pikes Peak Highway	12½ Miles
Sept. 13	Syracuse, N. Y.	Horace P. Murphy	100 Miles
Oct. 4	Fresno, Cal.	Fresno Speedway Assn.	150 Miles
Oct. 19	Kansas City, Mo.	K. C. Speedway Assn.	250 Miles
Nov. 29	Los Angeles, Cal.	L. A. Speedway Assn.	250 Miles

## Manufacturers Cheered by Reports from Retail Markets

NEW YORK, May 12.—The April shower is over and automobile manufacturers have checked their umbrellas, satisfied that the business skies have cleared and that it will be "fair and warmer" for some little time to come. Production, it is evident, is on a pre-April basis, dealer stocks are moving with the advent of more seasonable weather, and there seems to be no reason for any further setback while the spring demand is on.

While it is yet too early in the month to predict the May output, it is apparent that the manufacturers have been, so cheered by the reports from the field as to retail sales as to resume the even tenor of their ways, disturbed for the moment by the April slow-down in the plants. Cars are moving and, given a spell of good weather, dealers, their warehouses empty, ought soon to be clamoring for more.

Financially and otherwise, the industry never has been in better shape, say those who ought to know. Car builders are working in such close harmony with distributors and dealers that the ebb and flow of demand can be sensed almost instantaneously and production increased or decreased as occasion demands. They have the situation well in hand and can cut their cloth accordingly.

Parts makers whose customers are the car manufacturers say that never have collections been better, which is a sure sign of the industry's prosperous condition. They report that their clients have profited by their lessons of 1921 and are keeping their inventories well down, as is illustrated in the case of the biggest producer in the world who operates on an eight-day inventory. This might be expected to affect the business of the parts makers but this is not so. The latter, knowing that all car builders are running with low inventories can make their plans accordingly, which is a far better situation for the equipment people than having to run to capacity one month, only to shut down the next because of the cancelled orders of their customers.

## ADD TO BATTERY PLANT

MADISON, Wis., May 12.—Ground has been broken by the Burgess Battery Co., Madison, Wis., for a one-story addition, 120 x 250 feet, to be used almost entirely for the production of radio batteries and dry cells for automotive and other purposes. About \$100,000 will be invested in the new building and additional equipment.

The new shop is expected to be ready about July 1.

## Mechanics Lead Paige-Jewett Buying—Lawyers Last in List

DETROIT, May 12.—Distribution of Paige-Jewett cars according to occupational classification of buyers, shows mechanics, which includes skilled workers generally, to lead with 11.34 per cent. Merchants took 11.13 per cent of the output, salesmen took 8.86 per cent and executives and manufacturers with 8.56 per cent were next in order. The four above mentioned classes are noted by the factory as leading persistently during the past several months. Bankers, brokers and lawyers tailed the list.

Women purchasers took 7.12 per cent of the output, this classification including all women buying in their own names. Other purchasers by classification and the percentages taken were:

Building trades	5.98
Real estate, insurance	4.95
Physicians, dentists	3.8
Transportation employes	3.77
Clerks, accountants	3.56
Farmers	3.02
Political	2.21
Hotel, restaurant	1.97
Retired	1.82
Newspaper, printing	1.7
Taxi, livery	1.55
Garage, accessories	1.49
Engineers, architects	1.49
Teachers, clergy	1.16
Personal service	1.16
Bankers, brokers	1.13
Lawyers	.86
Miscellaneous	3.74
Occupation not given	7.63



Double-acting thrust bearing, flat seats (grooved races) 2100-F Series



Single-acting thrust bearing, flat seats (grooved races) 1100-F Series



Single-acting, self-aligning thrust bearing 1100 Series



Single-acting, self-aligning thrust bearing, leveling washer, 1100-U Series



Double-acting, self-aligning thrust bearing, leveling washers 2100-U Series

## Here's money in your cash drawer

### Install Strom Ball Bearings

"Customer satisfaction" is the secret of your success.

Insure it by installing Strom Ball Bearings. They make good. They wear well. They last.

Nothing disappoints a customer more than dissatisfaction over a repair job that does not stand the gaff. On the other hand, a good job of repairing that stands up well brings that customer back to you if his car, or truck, needs service.

Strom Ball Bearings are built for satisfaction. And they give it. Made of the finest chrome steel, heat-treated through and through, they stand hard wear.

Machined to the precision of the *finest* watch parts, they are standard equipment on the highest grade motor cars and motor trucks. There is a Strom Ball Bearing to meet any need.

There is a Strom dealer near you. If you don't know him, write us for his name.

# Strom

## BALL BEARINGS

Manufactured by

STROM BALL BEARING MFG. CO.

Formerly U. S. Ball Bearing Mfg. Co.

4551 Palmer Street, Chicago, Ill.



Single-row deep-groove Standard type, radial bearing



Double-row, deep-groove Standard type, radial bearing



Angular contact bearing, combination radial and thrust



Double-row, maximum type, radial bearing



Single-row, maximum type, radial bearing



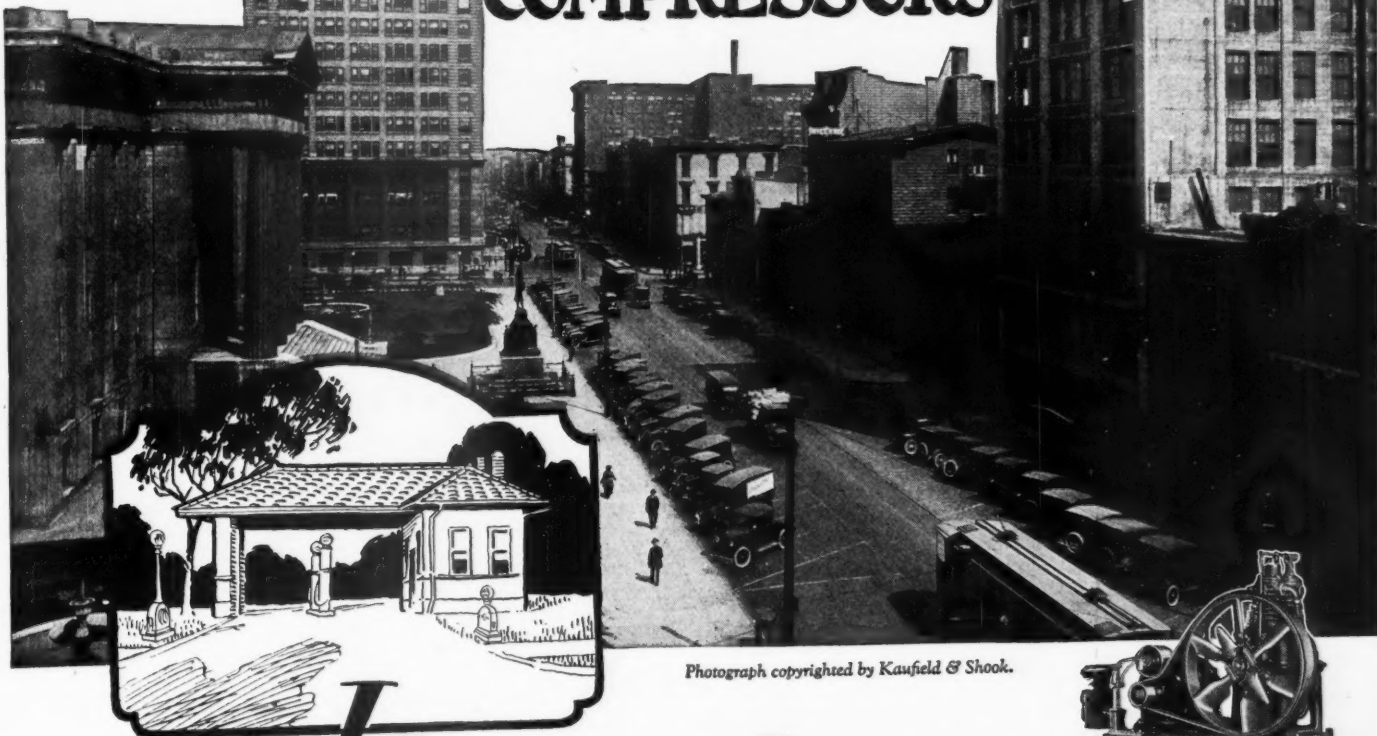


# CURTIS

## AIR

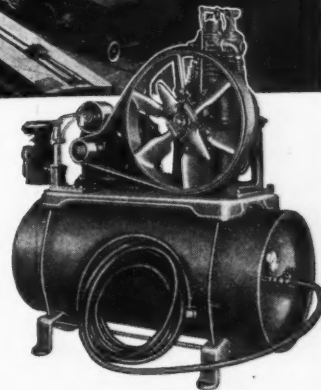
### COMPRESSORS

LOUISVILLE, Ky.—Population 257,671. Trade population 350,000. Jefferson Street, east, from City Hall Tower.



Photograph copyrighted by Kaufeld & Shook.

# In Kentucky



**K**ENTUCKY, with its ever growing population of over 2,500,000, with approximately 155,000 automobiles and over 2185 auto garages and accessory dealers, is a true reflection of the superiority of Curtis Air Compressors. Here you will find Curtis the popular choice—simply a tribute to a worthy product by a state long noted for its discriminating judgment of inherent quality.

Curtis Compressors are the product of an institution with a successful record of 70 years' manufacturing experience, 27 of which have been

devoted to the design and manufacture of air compressors and compressed air equipment.

This means that every purchaser of a Curtis Outfit can have complete faith in it—it means that when purchasing a Curtis you are getting a tried and proven compressor, one with an enviable record and a definite reputation to live up to; an assurance that a Curtis Air Compressor is not likely to ever become an "orphan."

A complete line of single and two-stage air compressors, a style, size and arrangement to meet your particular need. Also air and water stands. Use coupon for full information.

#### No Spitting of Oil When A Curtis Cuts Out

There are two sound reasons for this. First: the exclusive and patented controlled splash oiling system prevents an excess of oil from getting into the discharge line. Second: there is no bleeding discharge pipe or intermediate tank. Automatic starting and stopping device includes a centrifugal unloader, to relieve compressor of starting load.



The new Curtis Air and Water Stand made column or low type.

**CURTIS PNEUMATIC MACHINERY CO.**  
1527 Kienlen Ave. St. Louis, U. S. A.  
Branch Office 530-H Hudson Terminal, New York City

**CURTIS PNEUMATIC MACHINERY CO.**  
1527 Kienlen Ave.  
ST. LOUIS, MO.

Gentlemen:—Please send me full details on ☐ Curtis Air Compressors ☐ Curtis Air Stands, your proposition and prices.

Name .....

Address .....

Jobber's Name .....

Address .....

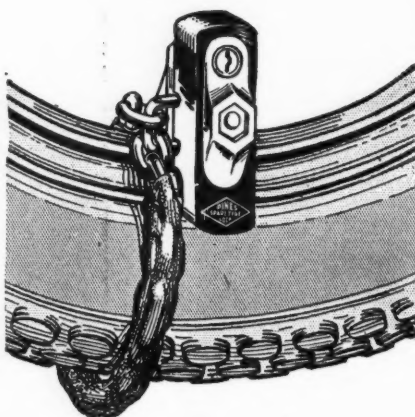
# CURTIS

1854 <sup>70th</sup> ANNIVERSARY 1924



# Pines Spare Tire and Steel Wheel Locks

The Pines Spare Tire Lock is a bronze forging which takes the place of the rim lug for holding the spare rim on the carrier. When the cover is in place the nut cannot be turned. A non-pickable lock controls the cover. The  $\frac{3}{8}$  inch hardened chain gives added protection.

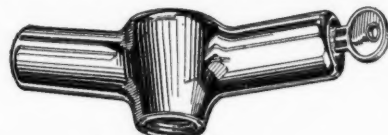


**Sells for**  
**\$6.50**  
**Complete**  
**With Chain**

## Positive Protection



FIG. 54  
Front and Side View of Model  
C, D and F to Show Threaded  
Sleeve



Pines Spare Wheel Lock (Fig. 54) is solid bronze, nickel plated, with two hardened steel sleeves (one protecting the lock cylinder, the other the carrier stud) cannot be turned. It is like putting a nut on a bolt and then putting a cover over the whole works, so you can't get a wrench to it. Hammer, chisel or saw are all of no use.

Best possible protection at a very reasonable price, \$5.00.

## Quality High

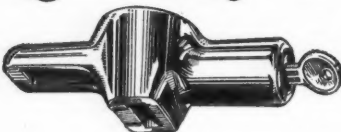


FIG. 55  
Front and Side View of Model  
"E" Lock, Showing Flat Hole  
for Stud

## Price Low



Pines Tire Lock (Fig. 56) fits the 3-leg style of carrier. One side of the adapter straddles one leg of the carrier, the other hugs the lock. The lock takes the place of the rim lug and holds the spare rim securely to the carrier. The nut cannot be unscrewed unless the cover is removed.

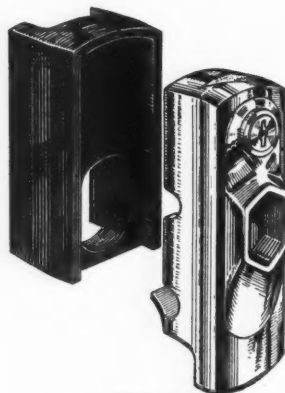


FIG. 56  
Shows Model B Lock and  
Adapter to Make Model G

Convenient protection  
and a high grade job.  
Sells for \$5.75.

Pines Spare Wheel Lock (Fig. 55) is solid bronze, nickel plated, and is made to fit over the flat stud of certain makes of spare wheel carriers, such as Hupmobile, Oakland and others. A half turn of the key in the cylinder draws the locking bolt, the lock is then pushed over the flat stud of the carrier (which has a padlock hold in it). Turning the key back pushes the locking bolt through the padlock hole in the stud and the spare wheel is protected. No hammer, chisel, saw or file has any effect on the lock. Real protection and looks 1000% better than a padlock. Sells for \$5.00.

**PINES WINTERFRONT CO.**

404-424 N. Sacramento Blvd., Chicago, Ill.

# VELIE

## To Progressive Dealers:—

The Big Velie Six—"The Largest Six in the World for the Price."

Not only quantity, but incontrovertible quality. A great seller!

• 118 inch wheel-base! The popular high-temperature baked enamel finish, attractively striped! Balloon tires and disc wheels, at a price that will move cars. • Big 50 horsepower engine—

built in its own shop. Overhead valves give instant response to control and marked operation economy. The most highly developed pressure lubrication system, cushions every moving engine part against wear. Long life!

• The new Velie management has greatly stimulated quality of merchandise and production.

• Our line is backed by liberal advertising, a generous dealer finance plan and ample sales helps. • Wire—or write for complete information, now—today!

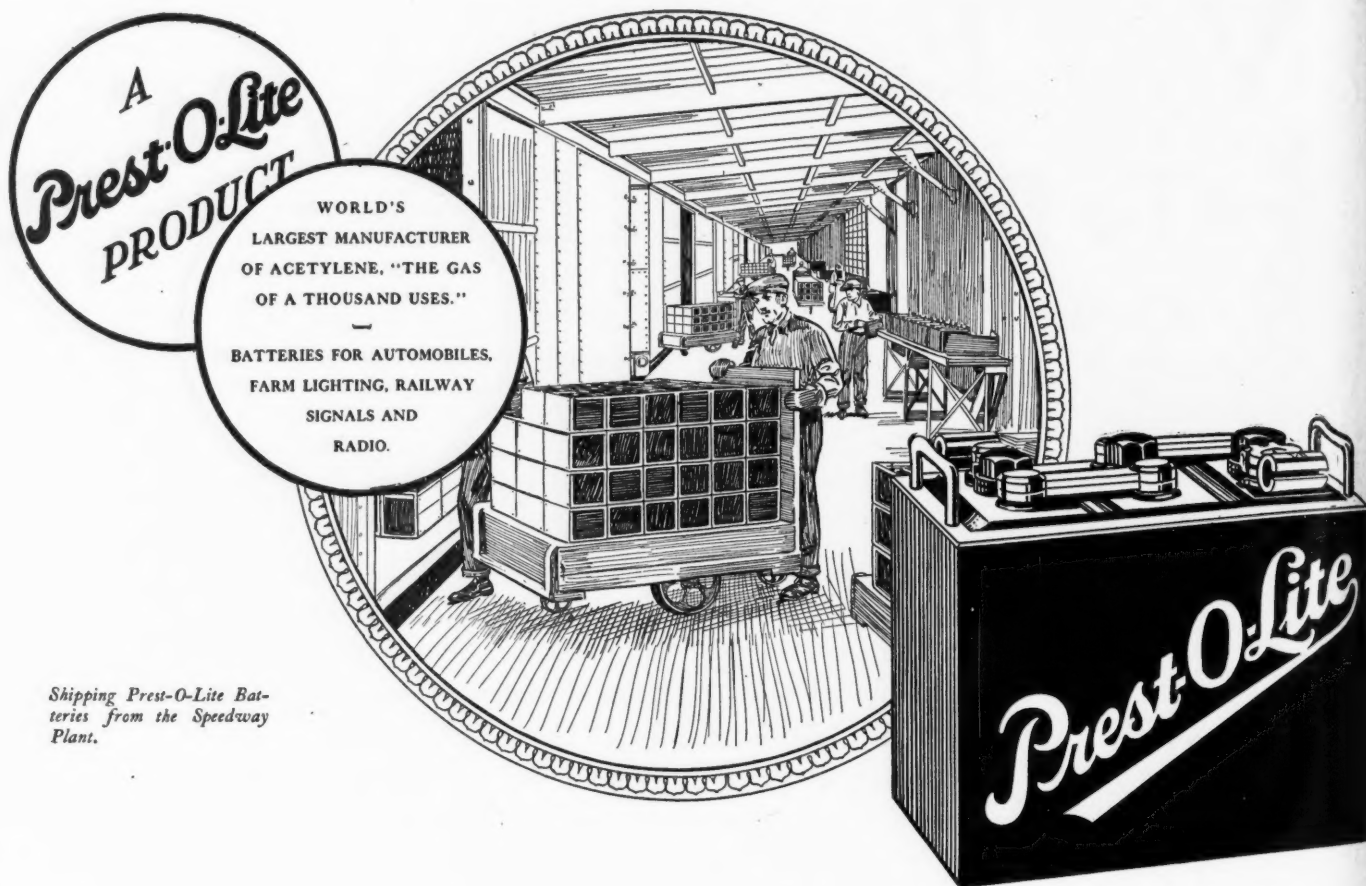
Send for a copy of Velie Dealer Values—a book of unusual interest to dealers!

Phaeton \$1095      Sedan \$1545  
*At the factory; U. S. tax extra*

VELIE MOTORS CORPORATION,  
Moline, Illinois







## When a Customer Asks You

For complete details of Prest-O-Lite Batteries, write to Indianapolis, Ind., Dept. 5.

—what battery to buy to replace his old one, you want to be pretty sure before you recommend one.

Because your reputation is at stake.

In recommending a Prest-O-Lite Battery, you know you are safe because Prest-O-Lite has earned its national reputation for unfailing dependability.

And back of every Prest-O-Lite Battery stands the national spread of Prest-O-Lite Service—known to motorists as "The Friendly Service."

**THE PREST-O-LITE COMPANY, Inc.**  
INDIANAPOLIS, IND.

New York: 30 East 42nd Street

Pacific Coast: 599 Eighth Street, San Francisco

In Canada: Prest-O-Lite Company of Canada, Ltd., Toronto



The Sign of  
"Friendly Service"

Service Stations Everywhere

# Prest-O-Lite

THE OLDEST SERVICE TO MOTORISTS



**HIGH**  
IN QUALITY

JOHNS-MANVILLE  
ASBESTOS  
BRAKE LINING



**LOW**  
IN COST

JOHNS-MANVILLE  
ASBESTOS  
BRAKE LINING



NO CHATTERING

**JOHNS-MANVILLE**  
ASBESTOS  
BRAKE LINING



**LONG**  
IN SERVICE

JOHNS-MANVILLE  
ASBESTOS  
BRAKE LINING



**LIGHT**  
ON WEAR

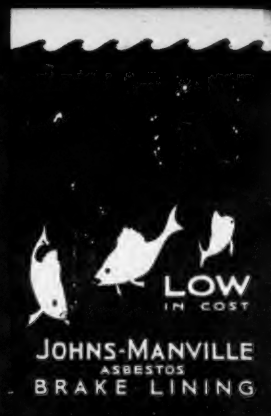
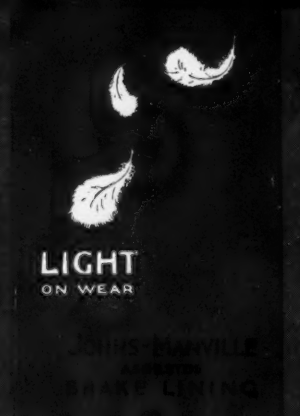
JOHNS-MANVILLE  
ASBESTOS  
BRAKE LINING



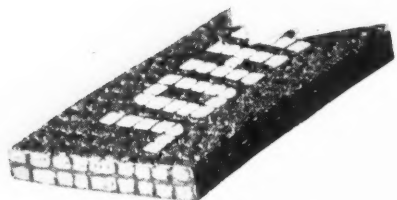
**HEAVY**  
SERVICE

JOHNS-MANVILLE  
ASBESTOS  
BRAKE LINING





# Any way you look at it -



## *Endways:*

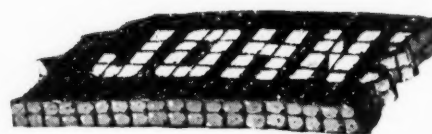
Notice how the impregnation penetrates right through each piece of Johns-Manville Brake Lining. This thorough impregnation with compound increases its naturally high resistance to the action of oil, grease, water and also greatly increases and preserves its frictional qualities.



## *Lengthways:*

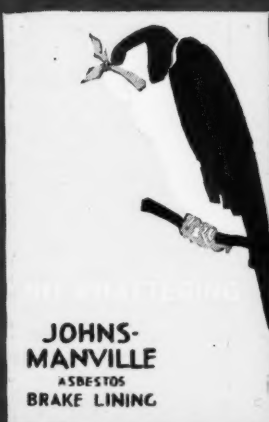
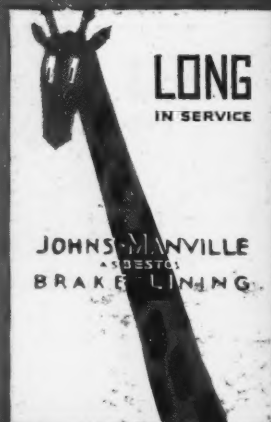
This shows how heavy and dense the weave is. Many years experience has shown us that a hard dense piece of lining will give better service than soft flexible material. The unusual density of Johns-Manville Lining means unusual durability and service.

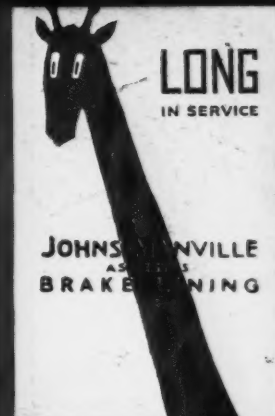
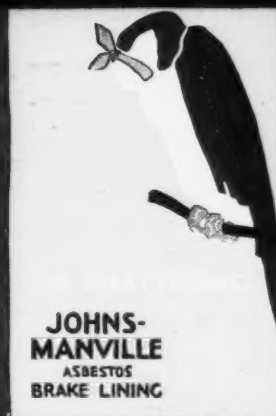
Also note how all cross yarns are woven well below the surface so that they will not be destroyed until the lengthwise yarns, which they support, have given full service.



## *Edgeways:*

See how the thickness of Johns-Manville Brake Lining is maintained right out to the edge. This assures an even contact and maximum braking power from edge to edge on Johns-Manville Brake Lining. Note how tightly woven the edge is, too. This prevents its over-running the edges of the brake bands in service.





**W**E are giving the motorist the best brake lining he can buy—as the few paragraphs on the opposite page prove. You are interested in this because he is your customer as well as ours. We both want “satisfied customers”.

But we realize that the success of Johns-Manville Asbestos Brake Lining lies as much with the trade as with the consumer—so

### *Here's what we do for you*

We are giving you a 1924 price schedule that allows low prices and good, fair profits.

We selected several years ago a group of Distributor-Dealers throughout the country with whom we are proud to be connected. They offer you any amount of Johns-Manville Lining that you may need—at *quick deliveries*. Their names appear on the next page.

We have a great many dealer helps that are entirely at your service. Some of them are pictured in the next column.

### *Our latest*

We have just completed a series of window stickers that are colorful, novel and will attract considerable attention. They are the animal posters—shown on these pages in miniature, actual size 12" x 18". Send for your set today—they'll make a mighty exceptional display in your windows or on your walls.

## **Johns-Manville Dealer Helps —help yourself**

*Put this attractive flange sign up on your shop-front. It'll help catch some of the brake lining business that drives by. Get yours from your distributor.*



*This rack inside your shop performs a triple duty. It's a silent salesman; it's a handsome piece of shop furniture; and it's a mighty handy place to stock brake lining. Free with initial 300-foot order of Johns-Manville Brake Lining.*

*Get some of these advertisements in your local newspapers—over your own garage name. They not only go out and get the business, but establish a lot of good will that turns into business later on. Ask your distributor for the cuts—free.*





# Choose your distributor,

- Alabama**  
Moore-Handley Hardware Co., Birmingham  
Johnson Tire & Auto Co., Montgomery
- Arkansas**  
Fort Smith Automotive Supply Co., Fort Smith  
Crow-Burlingame Co., Little Rock
- California**  
Chanslor & Lyon Co., Fresno  
The Banta Company, Los Angeles  
Chanslor & Lyon Co., Los Angeles  
Featherstone, E. A., Los Angeles  
McCoy Motor Supply Co., Los Angeles  
Chanslor & Lyon Co., Oakland  
Weinstock-Nichols Co., Oakland  
Kimball-Upson Co., Sacramento  
P. W. Gavin Company, San Diego  
Chanslor & Lyon Co., San Francisco  
McCoy Motor Supply Co., San Francisco  
Weinstock-Nichols Co., San Francisco  
California Auto Supply Co., Stockton
- Colorado**  
Auto Equipment Co., Denver  
Foster Auto Supply Co., Denver  
Motor Accessories & Tire Co., Pueblo
- Connecticut**  
Hessel & Hoppen Co., New Haven  
Motor Tire Service Co., Putnam
- District of Columbia**  
National Electrical Supply Co., Rubel, Chas., & Co.
- Florida**  
Baughman Company, G. Norman, Jacksonville  
Baughman Company, G. Norman, Miami  
Baughman Company, G. Norman, Tampa
- Georgia**  
Alexander-Seewald Co., Atlanta  
Ozburn-Abston & Co., Atlanta  
The Frank Corporation, Savannah
- Illinois**  
Chicago Automobile Supply House, Chicago  
Motor Car Supply Co., Chicago  
Sheridan Auto Supply Co., Chicago  
Tenk Hardware Co., Quincy  
Washington Auto Supply Co., Washington
- Indiana**  
Orr Iron Co., Evansville  
Lomont & Co., Ft. Wayne  
The I. J. Cooper Rubber Co., Indianapolis  
Goodlin Auto Equip. Co., South Bend
- Iowa**  
Cedar Rapids Auto Supply Co., Cedar Rapids  
Sleg Co., Davenport  
Herring Motor Co., Des Moines  
Repass Auto Co., Waterloo
- Kansas**  
The Weldon Motor Supply Co., Salina  
Southwick Auto Supply Co., Topeka  
The Massey Hardware Company, Wichita
- Kentucky**  
Peaslee-Gaulbert Co., Louisville
- Louisiana**  
Shuler Auto Supply Co., New Orleans  
Interstate Electric Co., Shreveport
- Maine**  
The Farrar-Brown Company, Inc., Portland
- Maryland**  
Auto Supply Co., Baltimore  
Coggins & Owens, Baltimore
- Massachusetts**  
Linseott Supply Co., Boston  
Motor Tire Service Co., Fitchburg  
Duncan & Goodell Co., Worcester  
Motor Tire Service Co., Worcester
- Michigan**  
E. A. Bowman, Inc., Detroit  
Tisch Auto Supply Co., Grand Rapids
- Minnesota**  
Kelley-Duluth Co., Duluth  
Minneapolis Iron Store Co., Minneapolis  
Reinhard Bros. Co., Minneapolis  
Nicols, Dean & Gregg, St. Paul
- Missouri**  
Joplin Supply Co., Joplin  
The Faeth Company, Kansas City
- Missouri (cont'd)**  
Ayers Auto Supply Co., St. Joseph  
Beek & Corbitt Iron Co., St. Louis  
Fred Campbell Auto Supply Co., St. Louis  
Geller, Ward & Hasner, St. Louis  
Ozark Motor & Supply Co., Springfield
- Montana**  
Northwestern Auto Supply Co., Billings
- Nebraska**  
Nebraska Buick Auto Co., Lincoln  
Storz-Western Auto Supply Co., Omaha
- Nevada**  
Nevada Auto Supply Co., Reno
- New Hampshire**  
Thompson & Hoague Company, Concord
- New Jersey**  
Economy Auto Supply Co., Newark  
Pruden Hardware Co., Newark
- New York**  
Albany Hardware & Iron Co., Albany  
Martin-Evans Co., Brooklyn  
H. D. Taylor Co., Buffalo  
Morrow Distributing Corp., Elmira  
Weaver-Ebling Automobile Co., N. Y. C.  
Pruden Hardware Co., W. E. N. Y. C.  
Whitemore-Sim Co., Inc., N. Y. C.  
The Olmsted Co., Inc., Syracuse
- North Carolina**  
Carolinas Auto Supply House, Charlotte  
Glasgow-Stewart & Company, Charlotte  
Automobile Supply Co., Wilmington
- North Dakota**  
Grant-Dadey Company, Fargo
- Ohio**  
The Penn. Rubber & Supply Co., Akron  
C. & D. Auto Supply Co., Cincinnati  
The I. J. Cooper Rubber Co., Cincinnati  
The Penn. Rubber & Supply Co., Cincinnati  
The I. J. Cooper Rubber Co., Columbus  
The Penn. Rubber & Supply Co., Columbus  
The I. J. Cooper Rubber Co., Dayton  
The Penn. Rubber & Supply Co., Toledo  
The Penn. Rubber & Supply Co., Youngstown
- Oklahoma**  
Severin Tire & Supply Co., Oklahoma City  
Severin & Company, Tulsa  
Machinery & Supply Co., Tulsa
- Oregon**  
Wiggins Company, Inc., Portland  
Chanslor & Lyon Co., Portland
- Pennsylvania**  
Motor Accessories Co., Allentown  
Central Supply Co., Altoona  
The Penn. Rubber & Supply Co., Erie  
Front Market Motor Supply Co., Harrisburg  
General Auto Supply Co., Harrisburg  
Johnstown Auto Co., Johnstown  
General Auto Supply Co., Lancaster  
The Penn. Rubber & Supply Co., Oil City  
Berroldin Auto Supply Co., Philadelphia  
Gaul, Derr & Shearer Co., Philadelphia  
Roberts Electric Supply Co., H. C. Phila.  
Dyke Motor Supply Co., Pittsburgh  
Jackson Motor Supply Co., Pittsburgh  
American Auto Supply Co., Inc., Scranton  
General Auto Supply Co., York
- Rhode Island**  
Beleher & Loomis Hardware Co., Providence
- South Carolina**  
Frankie Co., Inc., C. D., Charleston  
D. W. Alderman, Jr., Inc., Florence  
D. W. Alderman, Jr., Inc., Greenville
- South Dakota**  
L. & L. Motor Supply Co., Sioux Falls
- Tennessee**  
Southern Auto Supply Co., Chattanooga  
The I. J. Cooper Rubber Co., Knoxville  
Ozburn-Abston & Co., Memphis  
Auto Supply Co., Nashville  
The I. J. Cooper Rubber Co., Nashville
- Texas**  
Ferris-Dunlap Co., Dallas  
Hans Johnsen, Dallas  
Tri-State Motor Company, Inc., El Paso  
The Equipment Co. of Texas, Fort Worth  
Meyer Co., Jos. F., Houston
- Texas (cont'd)**  
The Southern Equipment Co., San Antonio  
McCauley-Ward Motor Supply Co., Waco
- Utah**  
Inter-Mountain Electric Co., Salt Lake City  
Motor Mercantile Co., Salt Lake City
- Vermont**  
Vermont Hardware Co., Burlington
- Virginia**  
The Owens-Merritt Co., Danville  
Piedmont Hardware Co., Danville  
Crump Co., Benj. T., Richmond  
Meadows-Price Co., Roanoke
- Washington**  
Chanslor & Lyon Co., Seattle  
Reynolds & Reynolds, Seattle  
Chanslor & Lyon Co., Spokane  
Holley-Mason Hardware Co., Spokane  
Chanslor & Lyon Co., Tacoma  
Reynolds & Reynolds, Tacoma
- West Virginia**  
Williams Hardware Co., Clarksburg
- Wisconsin**  
Clemons Auto Supply Co., Eau Claire  
Andrae & Sons Co., Julius, Milwaukee  
Shadbolt & Boyd Iron Co., Milwaukee  
Tisch Auto Supply Co., Milwaukee  
Western Motor Supply Co., Milwaukee
- Wyoming**  
Auto Equipment Co., Casper
- CANADA**  
**Alberta**  
The Motor Car Supply Co. of Canada, Ltd., Calgary  
The Motor Car Supply Co. of Canada, Ltd., Edmonton  
**British Columbia**  
Marshall-Wells, B. C. Ltd., Vancouver  
**Manitoba**  
Wood, Vallance, Ltd., Winnipeg  
**New Brunswick**  
The Lounsbury Co., Ltd., Moncton  
**Nova Scotia**  
J. J. Snook, Ltd., Truro  
**Ontario**  
A. Chown & Co., Ltd., Kingston  
A. Workman & Co., Ltd., Ottawa  
Hyslop Brothers, Ltd., Toronto  
Johnston-Deane, Ltd., Toronto  
Samuel Trees & Co., Ltd., Toronto  
Bowman-Anthony Co., Windsor  
**Saskatchewan**  
Wood, Vallance, Limited, Regina
- FOREIGN**  
**Argentina**  
Carlos Goffre & Co., Buenos Aires  
**Australia**  
Duncan & Co., Pty. Ltd., Melbourne  
Cornell, Ltd., Adelaide  
Canada Cycle & Motor Agency, (Queensland, Ltd.), Brisbane  
Hislop, Lloyd & Co., Sydney  
**Great Britain and Ireland**  
A. C. R. Greene & Co., Ltd., London  
**Japan and Korea**  
Takemura Company, Yokohama  
**Jugo-Slavia**  
William H. Smyth, Belgrade  
**Mexico**  
Mexico Auto Supply Co., Mexico City  
**New Zealand**  
Jas. J. Niven & Co., Ltd., Wellington  
**Denmark**  
F. Bulow & Co., Copenhagen  
**Spain**  
Luis R. Villamil, Madrid  
**Sweden**  
A. B. Stern & Stern, Stockholm  
**Switzerland**  
K. Bissegger Firm, Zurich  
**Union of South Africa**  
Bartle & Co., Ltd., Johannesburg  
**Uruguay**  
Clericetti & Barrella, Montevideo

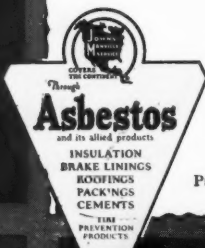
JOHNS-MANVILLE Inc., 292 Madison Avenue at 41st Street, New York City

Branches in 62 Large Cities

For Canada: CANADIAN JOHNS-MANVILLE CO., Ltd., Toronto

## JOHNS-MANVILLE Automotive Equipment

Printed in U. S. A.



JOHNS-MANVILLE  
ASBESTOS  
BRAKE LINING



JOHNS-MANVILLE  
ASBESTOS  
BRAKE LINING

HIGH  
IN QUALITY

LONG  
IN SERVICE

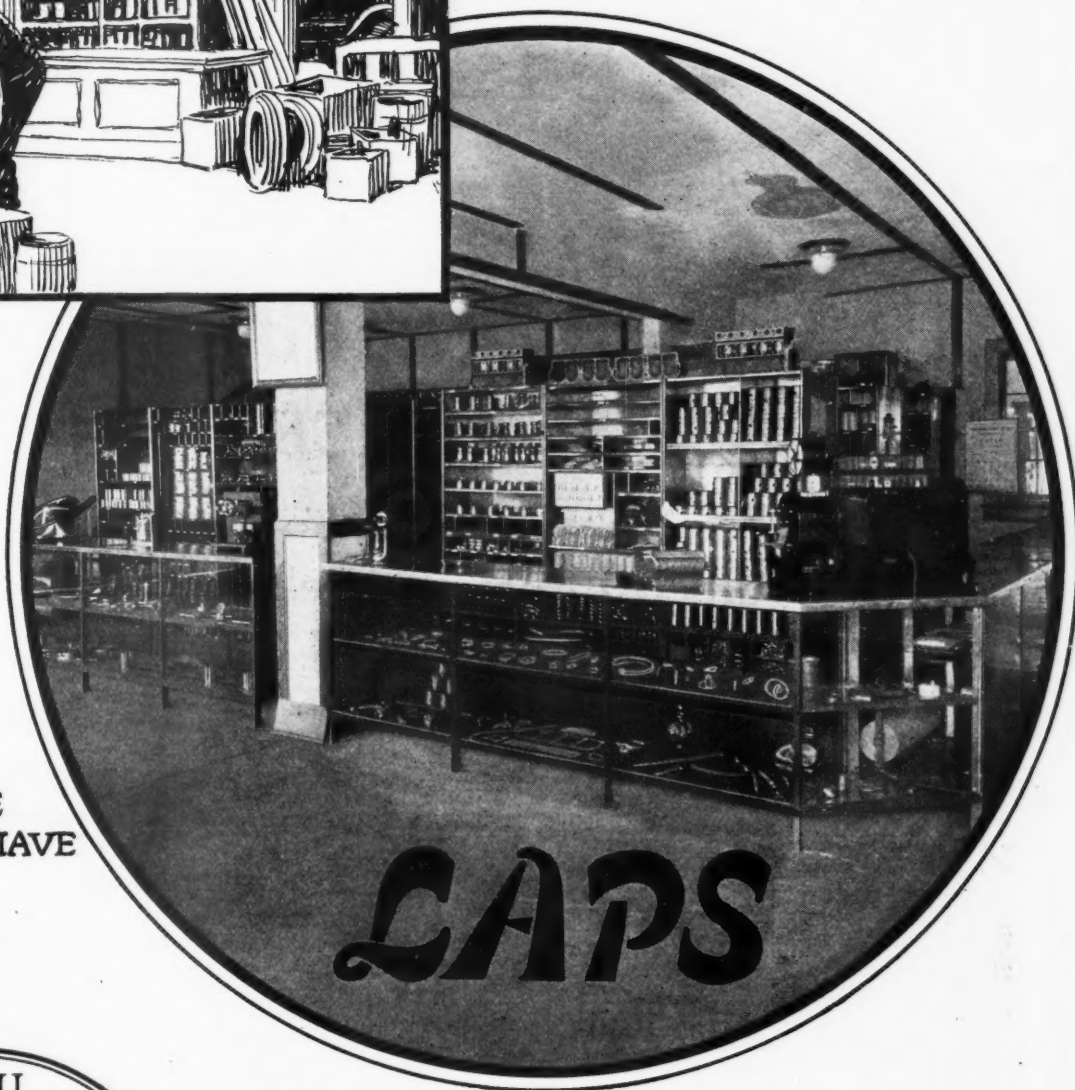
JOHNS-MANVILLE  
ASBESTOS  
BRAKE LINING

LIGHT  
ON WEAR

LOW  
IN COST



WHAT HE'S GOT



WHAT HE  
OUGHT TO HAVE

YOU,  
the automobile  
dealer, should be the  
Parts Depot in your  
territory.

WHY let the inde-  
pendent Parts Depot  
walk away with  
part of your  
profits?

Through its display value, a Lupton  
Display Counter and Parts Storage  
System increases sales and enables  
a dealer to make satisfied customers.

**DAVID LUPTON'S SONS CO.**  
Main Office and Factory, PHILADELPHIA  
SALES OFFICE: 2631 Woodward Ave., DETROIT

# LUPTON AUTO-PARTS STORAGE



Making an "easy-seller"  
easier to sell

**SHALER**  
**Self-Merchandiser**  
**is Sent FREE**

with a dozen Shaler 5-Minute Vulcanizers  
ordered from your Jobber

*Ask Your Jobber's Salesman*

It's easier to vulcanize **FIRST**  
and make it **LAST!**

**SHALER**  
**5-MINUTE VULCANIZER**  
*For quick repairs  
at home or  
on the road*

**THE OUTFIT**

**THE METHOD**

**THE REPAIR**

PST! S-S-S  
THERE GOES  
ANOTHER "COLD PATCH"

5/8 ROUND AND 3/16 O.D.  
PATCH & HEAT UNIT  
SHALER  
5-MINUTE  
VULCANIZER  
OUTFIT  
COMPLETE  
OUTFIT  
WITH 12  
TUBES & HEAT UNITS  
**\$1.50**  
SHALER CO., WEAVER, ILL.

# SHALER



## Big 1924 Sales Campaign

Shaler sales for 1923 were the largest in the history of our business. We shall therefore increase our national advertising during 1924 to still further increase the demand for Shaler 5-Minute Vulcanizers, and give Shaler dealers more effective co-operation than ever before.

A steady, consistent campaign of advertising will appear during 1924 in The Saturday Evening Post, Popular Science Monthly, and all the leading motorist publications, which are read by motorists throughout the entire United States and Canada. Our advertisements will tell motorists why they should buy a Shaler Vulcanizer. "Tell 'em you sell it" and get the benefit of our national advertising.

**C. A. SHALER CO.**  
209 Fourth Street      Waupun, Wis.

Get a Shaler Self-Merchandiser from your jobber—put it in your window or on your counter. Then watch your sales of Shaler 5-Minute Vulcanizers increase.

Remember that after you sell a Shaler 5-Minute Vulcanizer you start a steady chain of sales which bring you in a steady profit on the sale of Shaler Patch-&-Heat Units for use with the vulcanizer, throughout the entire year.

The Shaler is not a seasonable product that sells for only two or three months in the year, but can be sold every month in the year. No other accessory makes such a quick "turn over" or pays dealers as large a profit on their investment as a Shaler Vulcanizer.

**C. A. SHALER CO.**      209 Fourth Street  
Waupun, Wisconsin

Send me full information about your FREE Self-Merchandiser.

We have \_\_\_\_\_ Shaler 5-Minute Vulcanizers in stock.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_

Jobber \_\_\_\_\_

**Mail Coupon NOW**





## The neighbor who carries the mail

This is the letter of a rural mail carrier:

"I AM writing to tell you about our mutual friend, the automobile. My automobile has increased my income from \$161 to \$190 per month. It has increased the number of people served from 410 to 1200.

"In October, 1918, I received my appointment as carrier on R. F. D. No. 2. This route is 30 miles in length, 28 of it being unimproved dirt road. I used to keep two horses, driving one of them one day and the other the next.

The average time consumed in making the circuit was 7 hours.

"In June, 1919, I bought an automobile. The average time consumed in making the trip is now 3 hours. As this leaves most of the afternoon available, I find it possible to add to my income by doing farm work and by the addition of a paper route. Probably 95% of all R. F. D. carriers use motor cars at least part of the year and their use is doing much to promote good roads."

Above the imposing entrance to the New York Post Office, this quotation from Herodotus is inscribed:

*Neither snow nor rain nor heat nor gloom of night stays these couriers from the swift completion of their appointed rounds*

It is a fitting tribute to the men who insure the prompt despatch and delivery of the mails. What a change has been wrought in rural life by the extension of their service to the farms!

The isolated home is isolated no longer. With the daily paper the mailman brings the whole world to its door. He brings the letters of distant friends. The coming of his car is the day's most watched-for event, for friendly tidings travel with him from home to home; he is the *neighbor* who carries the mail.

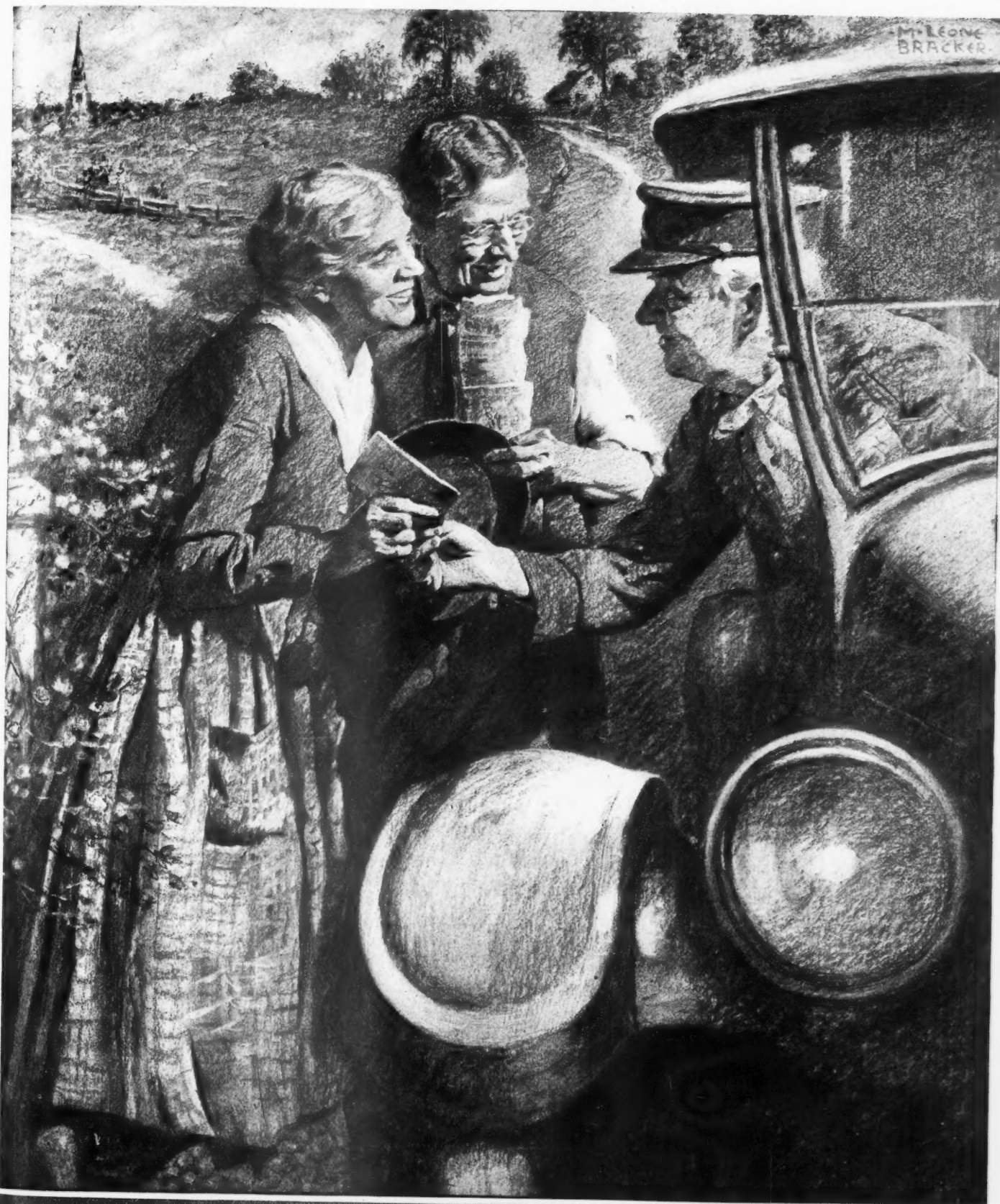
### PRODUCTS OF GENERAL MOTORS

BUICK  
CADILLAC  
CHEVROLET  
OAKLAND  
OLDSMOBILE  
GMC TRUCKS

Delco and Remy Electrical Equipment • Fisher Bodies • Harrison Radiators • Jacox Steering Gears • AC Spark Plugs—AC Speedometers • New Departure Ball Bearings • Delco-Light Electric Plants • Frigidaire Electric Refrigerators • Jaxon Rims • Brown-Lipe-Chapin Differential Gears • Lancaster Steel Products • Hyatt Roller Bearings • Inland Steering Wheels • Klaxon Horns.

General Motors cars, trucks and Delco-Light Products may be purchased on the GMAC Payment Plan. Insurance service is furnished by General Exchange Corporation.

# GENERAL



# MOTORS



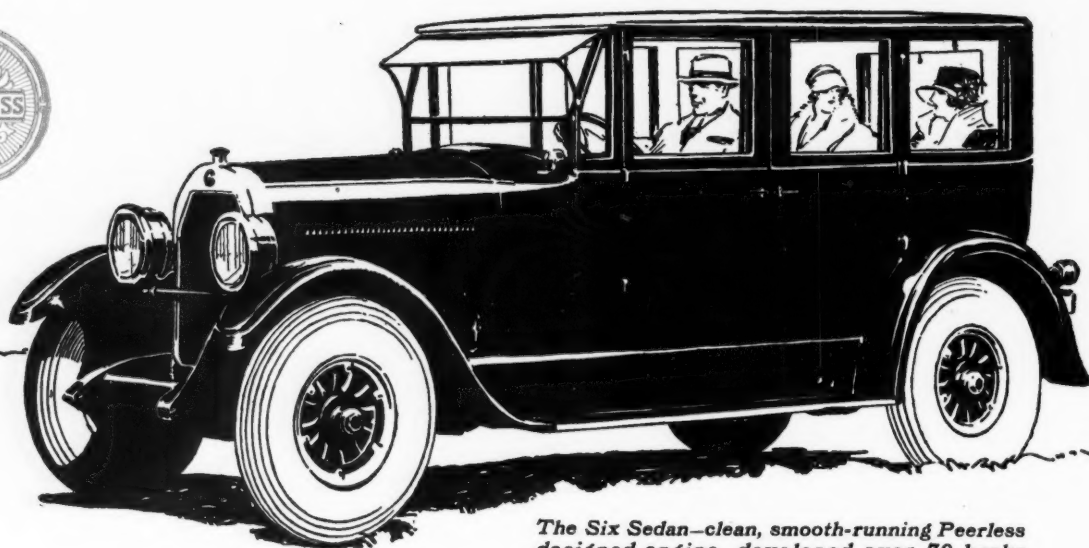
# An Eight and a Six— Both Make Selling Easier!

**D**ISTRIBUTORS and dealers everywhere tell us that the advent of the new Peerless Six has speeded up sales and increased profits to a remarkable degree.

Those, in the trade, who seek that rare combination of a fine old name—supported by distinctive and compelling advertising—and backed by cars whose year after year dependability is unquestioned, find this combination in Peerless—now both an Eight and a Six.

Certain localities are still open to the right sales organization. Write or wire for territorial information.

THE PEERLESS MOTOR CAR COMPANY, CLEVELAND, OHIO  
*The Matchless Peerless Eight and the New Peerless Six*



*The Six Sedan—clean, smooth-running Peerless designed engine, developed over 70 brake H. P., wheel base 126 inches. Broad seats with easy backs. Deep, soft cushions. High-grade mohair upholstery. Wide windows affording full vision. Easy to handle in crowded traffic.*

# PEERLESS

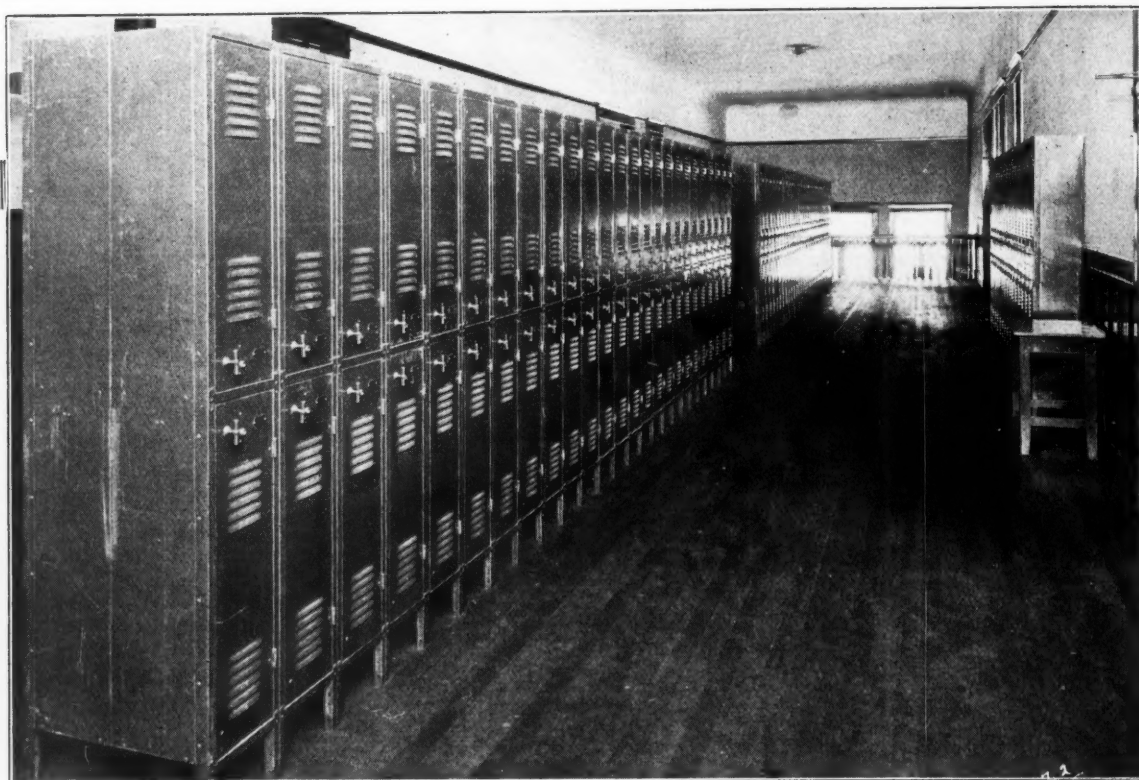


**S**IT at the wheel—step on the gas—meet the call of the hills with no thought of gear shifting. Experience mile after mile of fleet, effortless flight. Learn the keen joy of quiet, smooth power—full in volume, and dependable as only the Peerless Eight or Six can be. Both true companions of the open road. Both, rare in comfort—rich in beauty.

PEERLESS MOTOR CAR COMPANY ~ CLEVELAND ~ OHIO

*This two color advertisement appears in The Saturday Evening Post May 3rd issue, and in a four color page in Vogue, Vanity Fair and House and Garden June issues*





## “What’s become of the flashlight I had in the car?”

Questions like this from service customers make the garage-man wonder why he didn’t take up brick-laying. And they happen all too frequently. Some times tools and belongings do disappear from cars laid up for repairs, but usually they were lost before the car came into the place.

The remedy is economical and easy. Install a battery of Berloy Steel Lockers. Let your customer take his tools, robes and personal belongings out of his car when he brings it in for repairs. Assign him a locker and have him lock his things up himself. Let him carry the key until his car is ready to go out. There can be no question then about missing articles. And this service will bring you extra business that will pay for the lockers many times over.

Your mechanics will appreciate private lockers for their clothes and personal tools. The biggest industrial plants in the country have found Berloy Lockers for their workers to be a paying investment.

*Write the nearest branch or the home office  
for catalog and complete information.*

### THE BERGER MANUFACTURING CO., CANTON, OHIO

Boston  
St. Louis  
Los Angeles

New York  
Kansas City  
Dallas

Philadelphia  
Minneapolis  
Roanoke

Chicago  
San Francisco  
Jacksonville

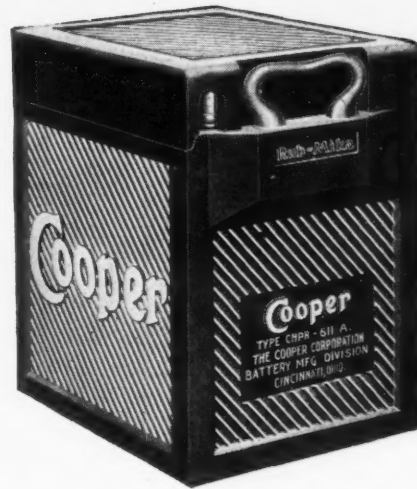
# BERLOY

# A steady source of income the year 'round!

**T**IRES in Summer—Batteries in Winter. That's how Cooper Dealers are protecting themselves against dull seasons. When one line is slow, the other is showing profit.



Cooper Super-Size Cords are the backbone of Summer profit. They are popular with thousands of motorists because of their easy riding, long mileage, sturdy beautiful appearance and their economy. Made in the Cooper factory by specialists from the finest tire materials. Backed by an organization with an intimate knowledge of the Dealer's problems and a willingness to serve.



Cooper Rub-Mika Batteries are the backbone of the winter profit. The most advanced idea in battery construction. A battery built with a case made of a compound that is noted for its strength and durability. A case that is waterproof, acid proof and nearly wear proof.

Patented and exclusive features such as the soft cushion bottom and Rub-Mika Lid are convincing features that mean quick sales and satisfied customers.

Cooper Wood Case Batteries for all cars and Cooper Radio Batteries enable the Cooper Dealer to handle all the battery business in the locality. Fill out and mail the coupon to get the interesting Cooper Sales Proposition.

The Cooper Corporation  
Cincinnati, Ohio

THE COOPER CORPORATION  
Cincinnati, Ohio

Show me how your plan can give me a steady source of income the year 'round!

Name.....

Address.....

M.A. 5-15

# Cooper

## TIRES—BATTERIES

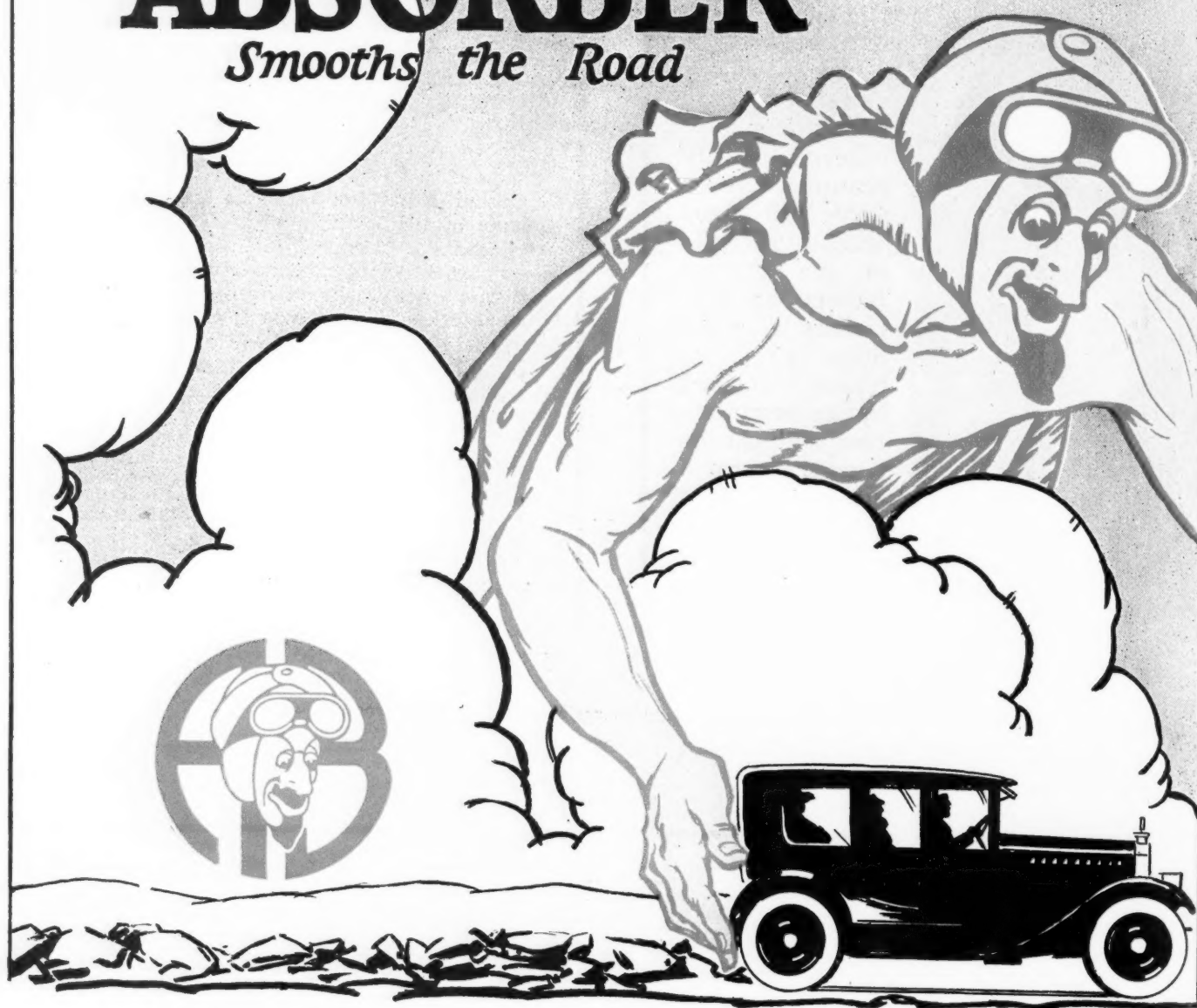
"Level the way to year 'round profits"



# BOSCH

## SHOCK ABSORBER

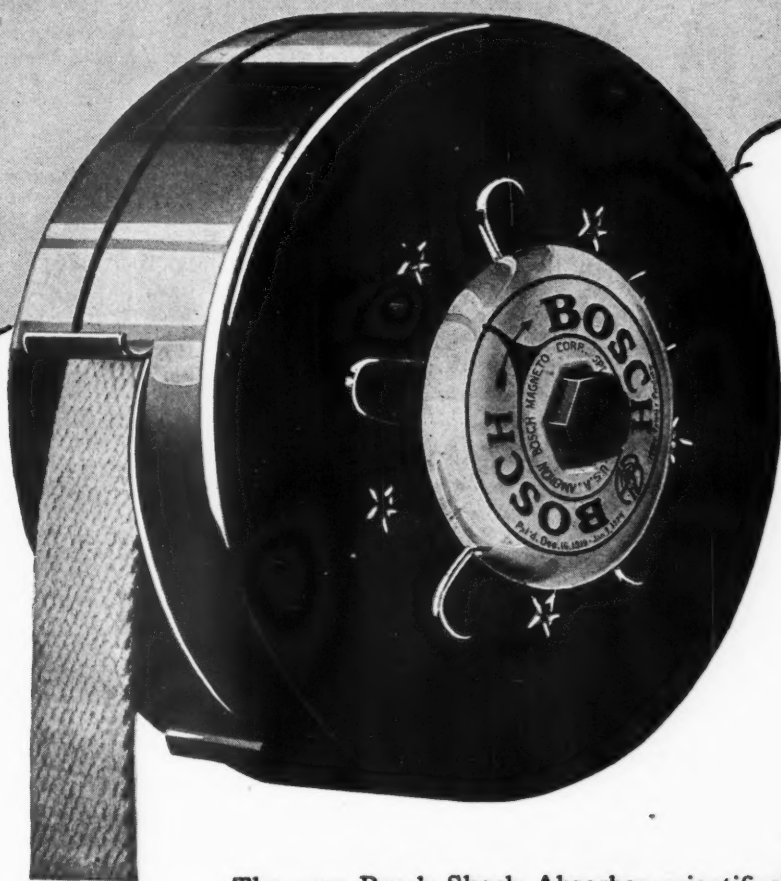
*Smooths the Road*



# AMERICAN BOSCH

MAIN OFFICE AND WORKS

SPRINGFIELD, MASS.



#### PRICES PER PAIR

For Fords	\$10.00
In Canada	\$15.00
For Medium Cars	15.00
In Canada	\$22.50
For Heavy Cars and Trucks	20.00
In Canada	\$30.00

The new Bosch Shock Absorber scientifically improves the riding qualities of any car. It keeps down repair bills. It is absolutely and amazingly effective at all times. It smooths the road and saves the car.

The Bosch Shock Absorber is easily adjustable to the owner's ideas, or territory characteristics. It seldom, if ever, requires attention.

It has a big, national advertising campaign, creating new customers every day. Being a Bosch Quality job throughout, it is backed by the Bosch Guarantee of complete satisfaction.

Write or wire for a sample set, C. O. D. at new Quantity prices. Get full particulars of new sales plans, with Big Profit discounts. Identify yourself with great Bosch National Advertising Campaign now broadcasting to millions.

# MAGNETO CORPORATION

BRANCHES:

NEW YORK

CHICAGO

DETROIT

SAN FRANCISCO

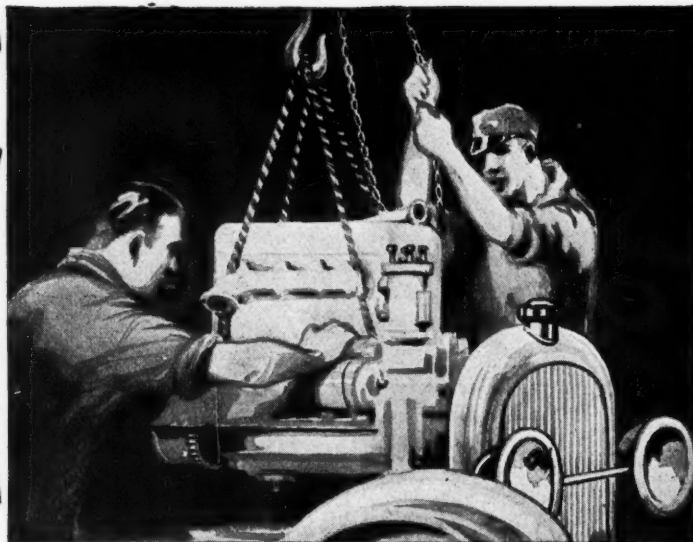




### Get this 68-page Bearing Guide!

One of our over 500 distributors is near you, with a full stock of Milwaukee's. It's a cinch he's "not-over-a-day-away" — maybe only a matter of three or four hours. Wouldn't it pay to know?

With every request for name of our distributor nearest you we will mail copy of our handy 68-page bearing guide which lists all cars, trucks and tractors, with bearing stock numbers of each. Makes ordering a mere matter of moments.



OVER 50,000 car dealers, truck dealers, independent repair shops and service stations installed MILWAUKEE BEARINGS last year.

How many of these 50,000 men were won to these greater bearings through downright quality alone—how many took quality for granted and ordered because MILWAUKEES are "not-over-a-day-away"—would be difficult to even estimate.

Perhaps the following phenomenal record is answer enough: Out of the thousands and thousands of MILWAUKEES shipped last year you could put all the "doubtfuls" in your tool box and still have room for a few wrenches. You could talk bearings to any hundred users and hear, in most cases without asking, that MILWAUKEE'S "not-over-a-day-away" service played a very vital part in bettering their delivery promises and holding their customers.\*

MILWAUKEE DIE CASTING CO.  
Dept. F-5 Milwaukee, Wisconsin

\*Not to mention that there's a nice profit in MILWAUKEES.

# MILWAUKEE "Not Over a Day Away" BEARINGS

# Try An "R-K-D" At Our Risk



## A Good Gas Gage for Your Dash

### Special Personal Offer to Dealers

We want you, personally, to see and use the "R-K-D"! Here is the biggest money-making opportunity you have had in years.

The "R-K-D" Dash Gas Gage tells, *from the seat*, just how much gas is in the tank—makes it as easy to read the gas in the tank as the miles on the speedometer. In conjunction with your speedometer, the "R-K-D" also shows how many miles the motor is giving per gallon of gas, what gas burns best, and how the engine is running.

The "R-K-D" is a brand new accessory—easy to install, and requiring no service. Electrically operated. Takes any gasoline feed. Now retails for only \$8.50, complete. No price resistance. *A fine profit for you in every sale.* Think how the "R-K-D" will sell!

### Special Price to You—With Money-Back Guarantee

Simply send us the make and model of your car, with a check or money-order for \$5.95, and we will send you an "R-K-D" by return mail.

Put the "R-K-D" on your own car. See how simple it is to install. Give the "R-K-D" a good hard test. Then, if you like it, and if you think you can sell "R-K-D" Gages to your customers, *keep it.* If you don't like it, send it back, without any obligation to yourself, and *we will return your money at once.*

You can sell dozens of these gages by merely letting people know you have them. We furnish fine advertising and sales helps free.

### So Easy to Sell—Big Profits

The "R-K-D" is *right*. It has the *full and official approval* of the Underwriters' Laboratories—for *Safety, Practicability, Uniformity, Durability and Accuracy.* It is being adopted by car manufacturers. You can sell lots of "R-K-D" Gages, with practically no effort.

People are tired of running out of gas because someone "forgot to look," or because they depended on an old-fashioned tank gage. People are tired of climbing out in all kinds of roads and weather to wipe off a dirty, greasy gas-tank dial, and maybe light a match to see—tired of overflows at the filling station, and arguments about short measure—tired of peeking under trunk racks, and around spare tires—tired of that "uneasy feeling."

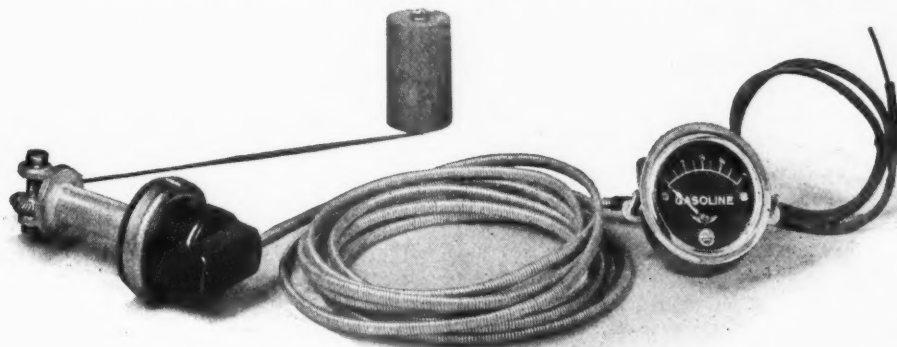
No wonder the "R-K-D" is so easy to sell. *The gas gage belongs on the instrument board*—and your customers know it.

*You can make big profits.*

### Your Gage Is Waiting

Send today. Give make and model of your car. Enjoy the advantages of the "R-K-D" while you are investigating it.

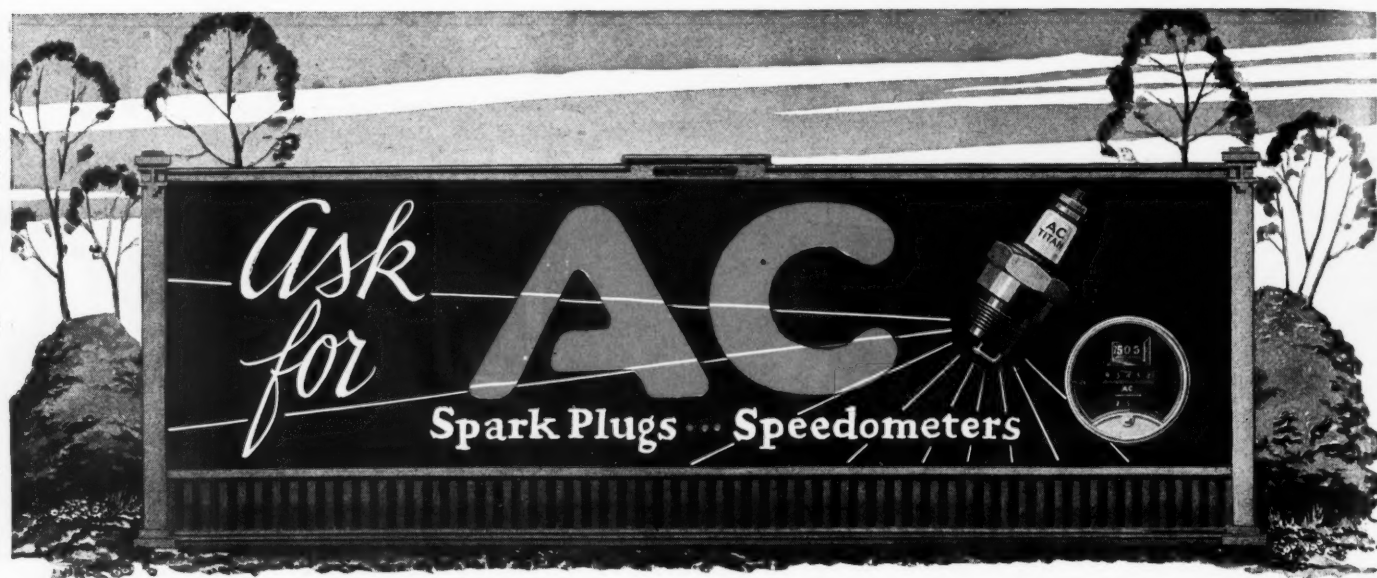
THE REITER-KING-DUGAN COMPANY, Akron, Ohio



No electric lights, glass tubes, liquids or sliding wires; no complicated, delicate or doubtful devices; nothing to get out of adjustment. No rattles.

The "R-K-D" consists of (1) meter for dash, (2) duplex armored cable extending from dash to tank, (3) special rheostat, operated by (4) thoroughly reliable float mechanism.





## These Painted Boards Are Working For You Everywhere—Every Day

All over America—wherever motorists travel—big, impressive painted bulletins advertising AC Spark Plugs and AC Speedometers are working every day for the dealer who stocks AC products.

National magazines, trade papers, store signs, direct mail advertising are continuously circulating millions of AC messages throughout the country—and newspapers too are spreading the story of AC superiority.

The market created by the enormous factory equipment business of AC products, backed up by all this effective advertising works tirelessly for the dealer who carries the full AC line and is ready to go after this profitable business.

AC Spark Plug Company, FLINT, *Michigan*

*Makers of AC Spark Plugs—AC Speedometers*

U. S. Pat. No. 1,135,727, April 13, 1915; U. S. Pat. No. 1,216,139, Feb. 13, 1917. Other Patents Pending

Reproduction of one of the AC 1075 Ads in The Saturday Evening Post

# A good plug for Fords!

# AC 1075

Here is why the AC 1075 is a good plug for Fords

## Spring Terminal Clip

makes it easy to test plug or coil while motor is running and locks nut so that it will not unscrew. There is no danger of damaging connection through use of pliers as the clip keeps it tight.

## Heavy Body Porcelain

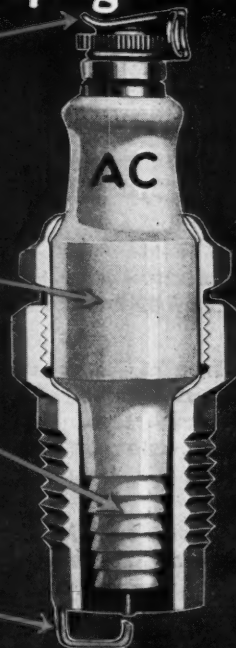
to withstand hard service—plug comes apart by unscrewing bushing.

## High Temperature Fins

Plugs become shorted by deposits of carbon. The thin edges of the fins on the patented carbon proof porcelain get hot quickly and burn away the deposits, thus preventing accumulation of carbon.

## Heavy Electrode

designed to form natural drain so no oil will lodge in spark gap.



INSTALL A SET OF AC 1075's TODAY—YOUR MOTOR WILL PERFORM BETTER

AC Spark Plug Company, FLINT, Michigan

Makers of AC Spark Plugs—AC Speedometers

U. S. Pat. No. 1,135,727, April 13, 1915; U. S. Pat. No. 1,216,139, Feb. 13, 1917. Other Patents Pending

*How the AC 1075 is being advertised in national publications to the Ford owner*

Thousands of dealers are building a big, profitable spark plug business among Ford owners on the AC 1075—a better plug for Ford engines—and you make a larger profit on them.

Write us for the attractive fibre poster, *in colors*, of the above advertisement which we have for you—to connect your store with this impressive AC advertising.

AC Spark Plug Company, FLINT, Michigan

Makers of AC Spark Plugs—AC Speedometers

U. S. Pat. No. 1,135,727, April 13, 1915; U. S. Pat. No. 1,216,139, Feb. 13, 1917. Other Patents Pending





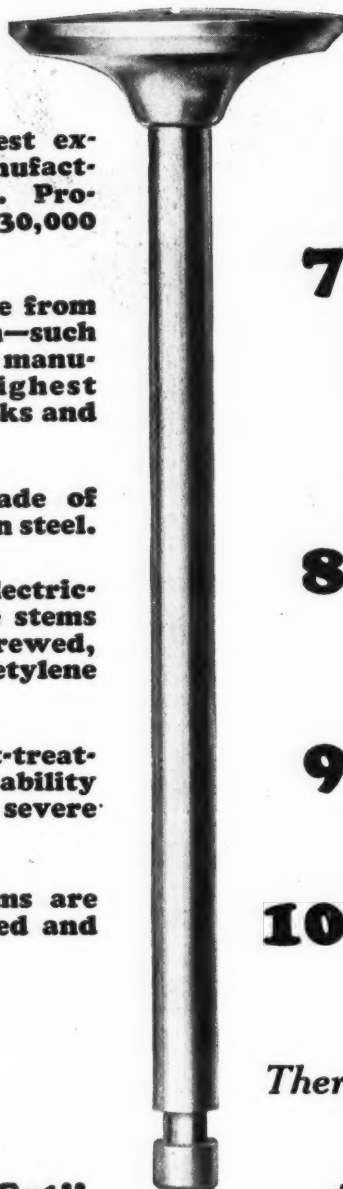
# 10



## REASONS WHY

it pays to install

## TOLEDO *Standardized* VALVES



**1** Made by the largest exclusive valve manufacturers in the world. Production capacity 30,000 daily.

**2** The heads are made from a very fine gray iron—such as is used in the manufacture of the highest grade cylinder blocks and pistons.

**3** The stems are made of S. A. E. 1020 carbon steel.

**4** The heads are electrically welded to the stems—not riveted, screwed, pressed, cast or acetylene welded.

**5** All valves are heat-treated—giving them the ability to stand up under severe service.

**6** The seats and stems are accurately machined and finely finished.

**7** They are easily “ground in.” It is a mistaken idea that the valve heads should be hard. They should be of sufficient hardness only, so that it is reasonably easy to “grind them in,” but not so hard that they will pound a groove in the seat of the cylinder block.

**8** The end of the stem is sufficiently hard to prevent undue wear and the throwing out of the adjustment.

**9** They are made in accordance with the respective manufacturers’ tolerances.

**10** More valves of this type are used in original production than all other types combined.

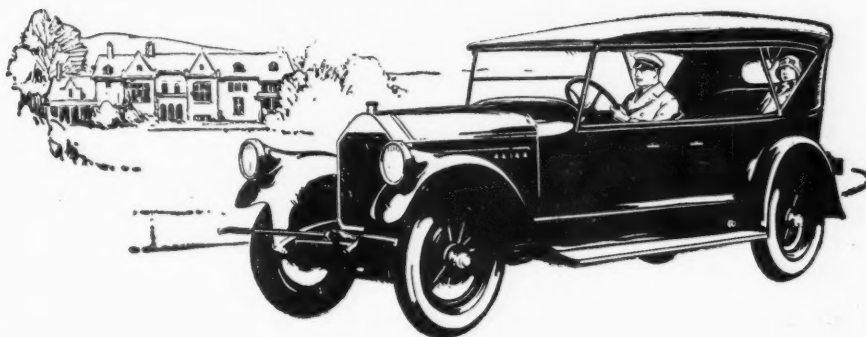
*There is nothing freakish about them*

**“Buy ’em by the Set”**

**Ask your Jobber**

**THE TOLEDO STEEL PRODUCTS CO., TOLEDO, O.**

# PIERCE



## Do you *know* how many Pierce-Arrows you could sell in your locality?

Pierce-Arrow is now entering the most successful period in its twenty-three years' history. Never before have its products—passenger cars, motor trucks and motor busses—been so eagerly sought.

Do you know what the sales possibilities are in your territory? If the valuable Pierce-Arrow franchise is available in your locality, we believe you will find it quite interesting to discuss its possibilities with us.

*The services of the Pierce-Arrow Finance Corporation have greatly widened the market for Pierce-Arrow products, enabling customers to pay out of income rather than capital, if desired.*

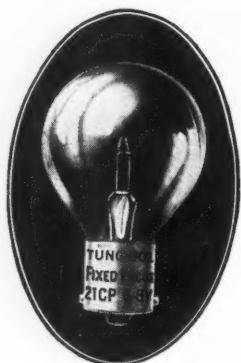
THE PIERCE-ARROW MOTOR CAR COMPANY  
Buffalo, N. Y.

▷PIERCE-ARROW▷

# ARROW

"PRIDE OF ITS MAKERS MAKES YOU PROUD IN POSSESSION."





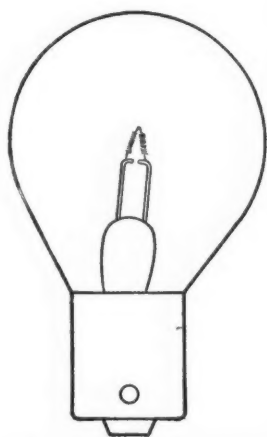
# TUNG-SOL

## A Profitable Line for the Dealer

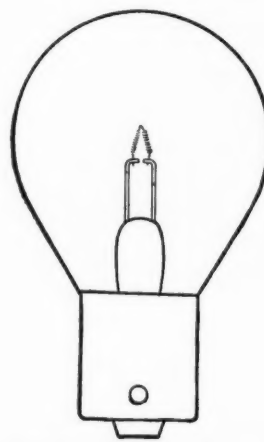
**T**HE constantly increasing sale of TUNG-SOL bulbs can only mean that the motoring public is no longer satisfied with ordinary bulbs. Car owners are quick to recognize unusual efficiency in an automotive part. They are keen judges of values. And it is this recognition of TUNG-SOL Quality, plus a forceful national advertising campaign that is responsible for TUNG-SOL demand.

Dealers know that the TUNG-SOL line is a profitable line. TUNG-SOL sells without effort and "repeats" consistently. These are interesting business factors that appeal to merchants in the automotive trade. TUNG-SOL bulbs meet every requirement. The TUNG-SOL "Fixed-Focus" headlamp bulb with filament *accurately* centered is particularly recommended for the new patented reflectors. When used with a reflector having a permanently "fixed" socket, the filament is exactly at focal center of the reflector.

THE DIFFERENCE BETWEEN TUNG-SOL AND ORDINARY BULBS — *TALK No. 5*



How often you find the bases crooked in an ordinary bulb. It is impossible to focus a bulb like this.



In all TUNG-SOL bulbs, the bases are straight and true. A TUNG-SOL focuses easily and accurately.

*"Let TUNG-SOL Light the Way"*



Trade Mark

MINIATURE INCANDESCENT LAMP CORPORATION

NEWARK, N. J.

*Licensed Under General Electric Company's Incandescent Lamp Patents*

# therefore a Balloon Tire Pump

## featuring the famous Rose Valve

Swiftly the balloon tire is becoming popular. Everywhere it is replacing the old "hard-as-rock" tire. The low pressure balloon tire must be constantly kept at exactly the right pressure. Manufacturers insist on it. The life of the tire depends on it.

### Every Owner of Balloon Tires Needs This Pump

A variation of a few pounds pressure may seriously damage a balloon tire. Every so often the owner will want to bring up pressure a pound or two. He will make much more frequent use of his tire pump than before.

Supply him with this easy valve action Rose Pump. Designed especially for furnishing a large supply of air for large capacity tires in record time. It will completely inflate to 25 lbs. pressure in 2½ minutes of easy pumping. 30 lbs. in 3 minutes.

A beautiful pump at a moderate price; \$3.50. Get your first order from your jobber at once. It is a profit maker.

She's a beauty; done in scarlet baked enamel barrel, nicked metal parts and black baked enamel grip. Sound as a dollar and guaranteed five years. Heavy materials finished in the finest workmanship. It's a pump a man wants on sight—even before you tell him it is an easy valve action Rose.

# ROSE

Rose is America's leading maker of high grade tire pumps. Today more than four million Rose Tire Pumps are in use. The Rose is nationally advertised and is widely popular in every state in the Union.

### A Complete Pump Family

Besides the famous Rose and the new Balloon Pumps, we also make two popular pumps in the low price field. They do not have the Rose valve, but aside from that are the best pumps that can be made at the price. The Daisy is a great buy for a dollar. The Dixie is made hip-high for those who "like 'em that way", and sells for \$2.00.

**FRANK ROSE MFG. CO.**  
HASTINGS, NEBR.



This pump embodies the famous Rose Valve — the valve that made tire pumping easy. Tell about the valve when you sell the pump.







## *Identifying the Individual*

Most people are normally assertive individuals who like to identify themselves and their possessions. A KEYSTONE RADIATOR CAP with an initial, monogram or emblem will meet this desire.

# KEYSTONE

THE GENUINE  
RADIATOR CAP  
*With Initials, Monograms and Emblems*

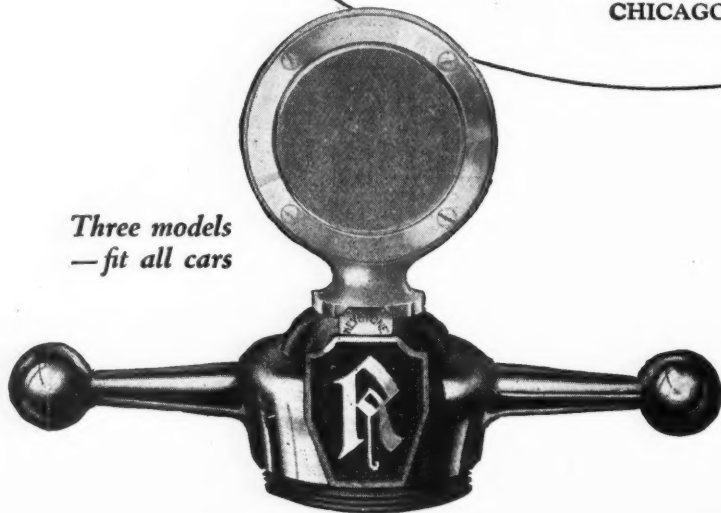
Self-locking. No installation—just screw it on the radiator neck—no keys or set screws.

Permanently theft-proof because they are absolutely rust-proof and will not stick or "freeze."

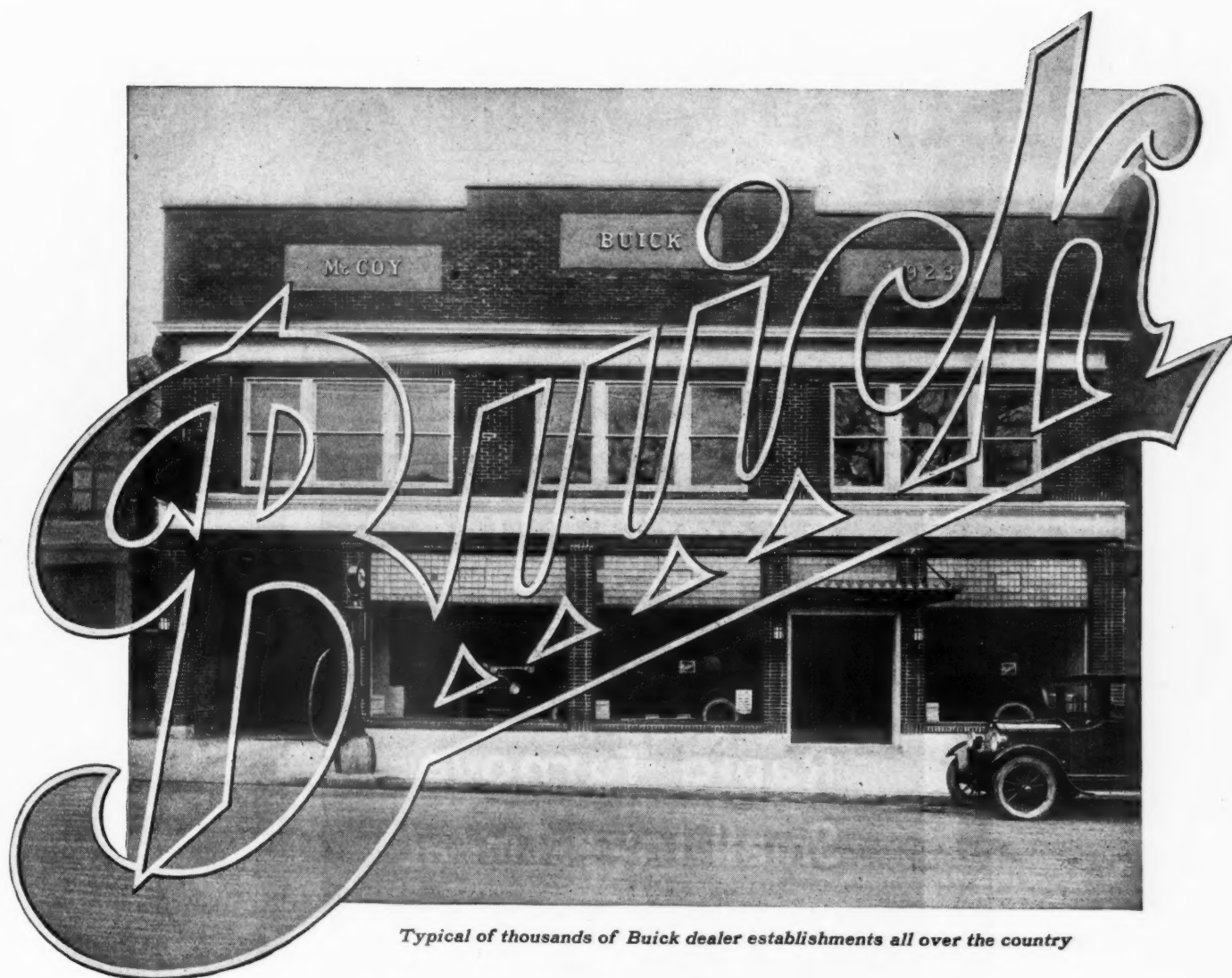
THE NORLIPP COMPANY

568 W. Congress St.  
CHICAGO

*Three models  
—fit all cars*



*Ask your distributor for dealer's proposition—also window displays, counter cards, pedestals and literature, or write us.*



## Buick Policies Bring Prosperity

**I**N every community Buick dealers are successful business men. Buick has contributed to their prosperity by a fair and liberal dealer policy, by aggressive factory sales cooperation and by building a car that is recognized everywhere as Standard of Comparison. Buick dealers last year sold 216,280 motor cars, for which the public paid \$302,752,950, not including freight or war tax. Why not have your name on file?

**BUICK MOTOR COMPANY, FLINT, MICHIGAN**

*Division of General Motors Corporation*

Pioneer Builders of Valve-in-Head Motor Cars

Branches in All Principal Cities—Dealers Everywhere

---

WHEN BETTER AUTOMOBILES ARE BUILT, BUICK WILL BUILD THEM

---



# Are You Selling A Profitable Jack Line ??



A Complete Line  
Minus  
Slow Moving Sizes  
Minus  
Wasted Storage Space  
Equals  
Rapid Turnover  
Plus  
Small Investment  
Plus  
Larger Profits

## AJAX RED BASE JACKS

WITH A FLOOR OR COUNTER DISPLAY STAND

IS THE ANSWER



The Ajax Display Stand is furnished **FREE** with an order for 12 jacks. Only 4 models.

It can be adjusted to form either a floor or counter display.

Ajax Red Base Jacks are used as original equipment on 22 well known makes of automobiles.

**AJAX AUTO PARTS COMPANY**  
Dept. A505  
**RACINE WISCONSIN**



## The Right Spring for Any Car IN A HURRY

A telephone and this new Detroit Spring price list—and you're all set to give the best spring service in your locality. Then when you have a replacement job, on any make of car or truck, just call up your nearest Detroit distributor and he'll get the right spring to you, *in a hurry*.

Your distributor has a complete stock of genuine Detroit Springs—the best springs you can put under a car. They are exact duplicates in every way of the original equipment, "built to the car maker's specifications." They *fit* and they save your valuable time.

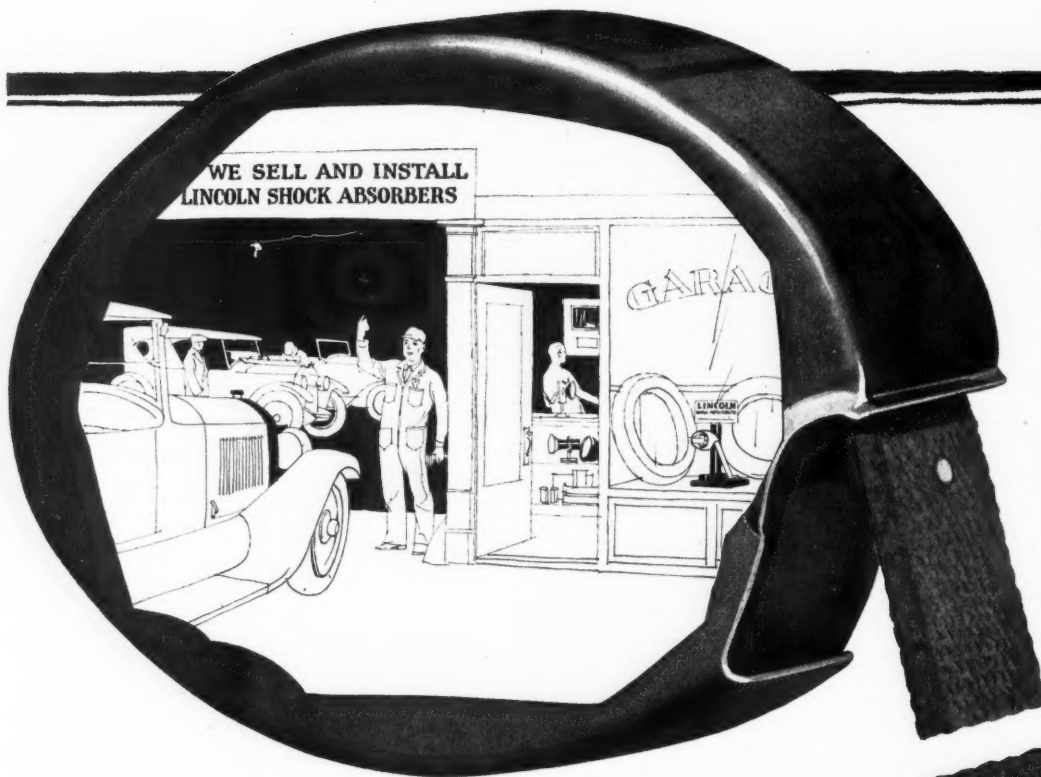
And now you can identify genuine Detroit Springs—by the letter "D" raised on each clip bolt head. You can be sure you are supplying the right spring for every replacement job and sending away a satisfied, business-building customer.

DETROIT STEEL PRODUCTS CO., 2268 E. Grand Blvd., Detroit, Mich.



**BUILT TO THE CAR MAKERS' SPECIFICATIONS**





*"Snubs  
The  
Rebound"*

**FOR  
ALL  
CARS**  
\$15 to \$36  
Per Set of Four

## Sales That Bring Double Profits!

Instead of one profit, the Lincoln plan of selling gives the dealer two on every sale. There is a liberal percentage on the sale of the merchandise, followed by an additional earning for making the installation.

A small stock of Lincolns provides a full line of sizes to fit every car. No matter what car your customer drives, he is a prospect—and a particularly active one due to the strong national advertising back of the Lincoln selling plan.

Lincoln dealers last year enjoyed 300% more sales than during any previous period of equal length. This record is the envy of every manufacturer in the accessory industry, because it was not just a seasonal spurt but the result of steady, substantial growth.

Do not be content with ordinary, average shock absorber sales and profits. You can make Lincolns your biggest selling accessory line, just as thousands of dealers did last year.

*Write for the Lincoln selling plan that proved so successful in 1923. It will enable you to win out over any kind of competition, and bank a generous double profit on every sale.*

**LINCOLN PRODUCTS COMPANY**

251 No. Kildare Ave., Chicago, Illinois

Canadian Factory: Lincoln Products Company, Ltd., Montreal

# LINCOLN SHOCK ABSORBERS

# ***KINGSTON products*** ***have been known to motorists*** ***for a Generation***

KINGSTON Ignition devices have been known to motorists for more than a quarter of a century. The experienced dealer knows that there will be, day in and day out, a steady and remunerative demand for products of the Kingston line.

It is this factor that has made the Kingston line so popular with dealers everywhere. They know that every motorist knows Kingston products, that motorists have been buying them for years, and will continue to buy them. Correctness of design, the test of materials and the utmost care in workmanship have contributed to that unswerving confidence that motorists everywhere have in the name Kingston.

Most dealers are cashing in on this steady demand, and have been for many years. For the dealer who is not acquainted with Kingston products, or who does not feel that he is getting his full share of this business, we have an interesting story to tell. Drop us a line.

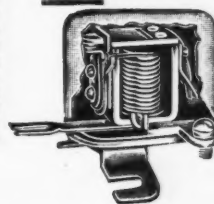
**KOKOMO ELECTRIC COMPANY**

KOKOMO, INDIANA

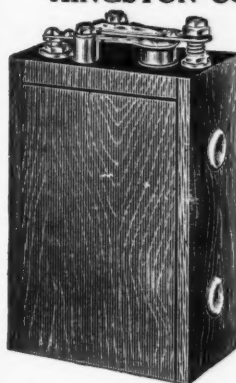
## **KINGSTON GENERATOR CUT OUT**

Wise dealers know there is no better Cutout at any price than the Kingston. It is expertly made, and is built to last. Furnished with curved base to fit the Ford generator or with flat base for use on any six-volt system.

LIST PRICE **\$1 00**



## **KINGSTON COIL UNIT**

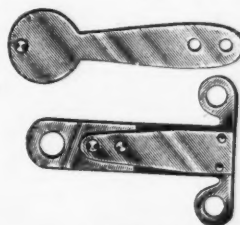


LIST PRICE **\$1 75**

MILLIONS of Kingston Coil Units are in use. They have given excellent service on Ford cars, for many years, and are recognized as wholly dependable.

## **KINGSTON POINTS**

Kingston Contact Points are extra large in size, and are suitable for use both on Ford cars and Fordson tractors. Buy the genuine!



LIST PRICE  
**20c per  
set**

# **KINGSTON**



# Heat-shaped to insure perfect roundness

## **Every Pedrick Piston Ring—Compression and Oil-Control—Is Heat-Shaped to Perfect Roundness and Equal Radial Pressure**

**T**HIS exclusive Pedrick process insures that every Pedrick Heat-Shaped Piston Ring is of exactly the same outstanding quality that has made Pedricks standard factory equipment on Packards for the past five years.

For the replacement field, Pedrick has *originated* a policy that is just as distinctive as the ring itself!

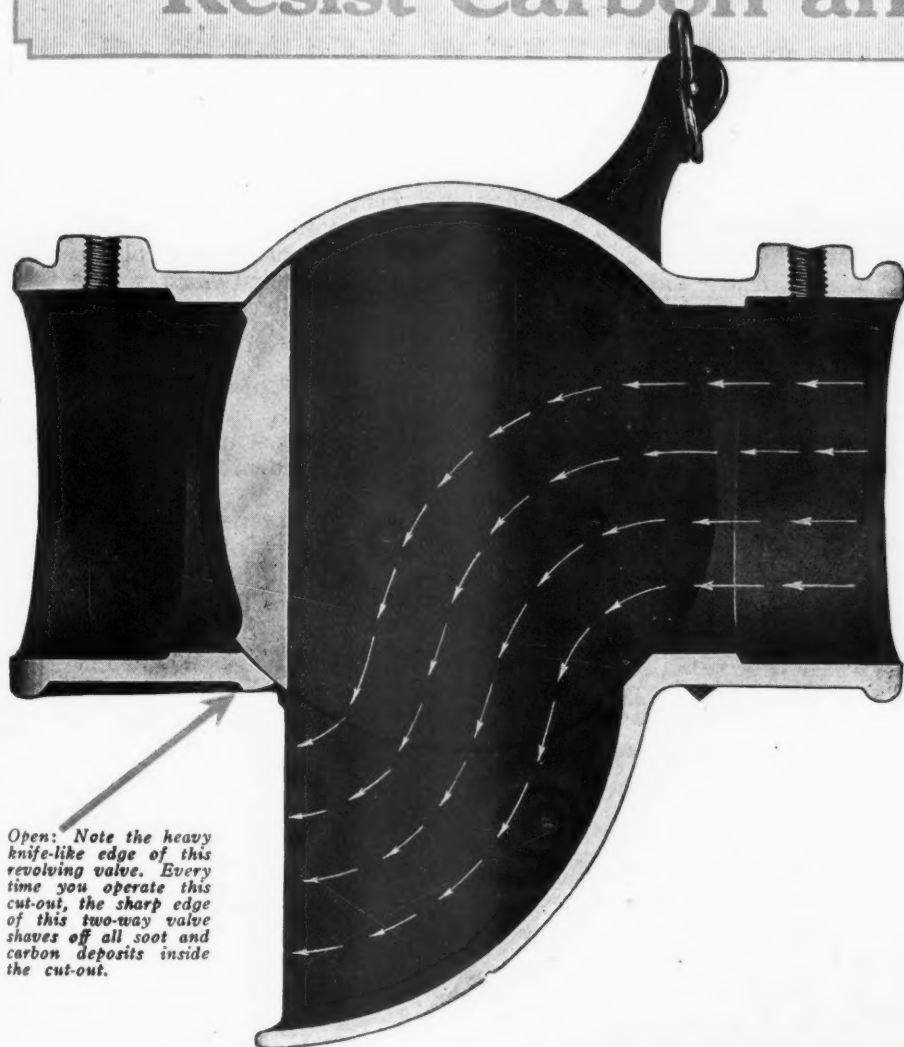
Pedrick has priced the Oil-Control and the compression ring at the same list; and made up the *Combination Package*. This *Combination Package* contains eight compression and four Oil-Control rings—complete equipment for four cylinders. The *Combination Package* cuts down dealers' stocks by removing the necessity of carrying separate stocks of compression and Oil-Control rings. It insures satisfied customers and rapid turnover of stocks. The Price? Pedrick Heat-Shaped Piston Rings are sold at almost the price of a snap ring!

**WILKENING MANUFACTURING COMPANY**  
15th and Mt. Vernon Streets Philadelphia, Pa.

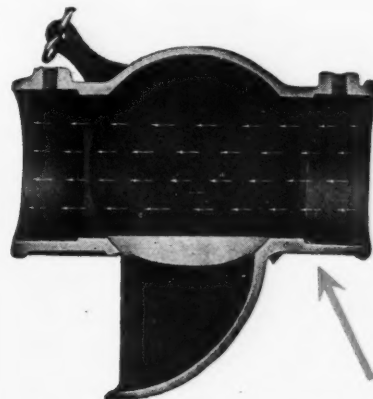


**Pedrick**  
HEAT-SHAPED  
**PISTON RINGS**

# Scientifically Designed To Resist Carbon and Heat



Open: Note the heavy knife-like edge of this revolving valve. Every time you operate this cut-out, the sharp edge of this two-way valve shaves off all soot and carbon deposits inside the cut-out.



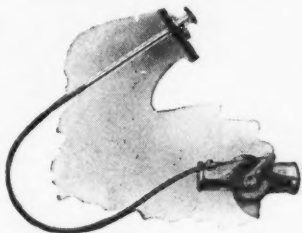
Closed: The valve fits snug and close—cannot fit otherwise. No rattles! No escaping gas to cause annoyance.

## Compare These Features

1. Very light in weight. No Strain on the exhaust line.
2. The Goodrich revolving two-way valve. Every time it is moved, the knife edge cuts off the carbon.
3. No chatter from back pressure. Spring pulls valve back into place, but valve does not depend on spring to hold it there.
4. Extra long shank insures rigid support and perfect fit on exhaust pipe.
5. Connecting parts all jig machined makes perfect fit. No rattles. Parts interchangeable.
6. Bell mouth opening insures loud, sharp notes. Each cut-out packed in an individual carton, complete with pulley, cable and pedal, ready for installation. No extra parts to buy.

### NEW!

Goodrich Dash Control  
with the positive stop



Handy! Enables driver to open cut-out entirely or partially by hand from seat. Has positive catch—makes control easy. No foot pedal to disconnect when removal of floor boards becomes necessary. Furnished with Goodrich Motor Testing Valve or separately.

Ideal for regulating shutters, heaters and the like. List price \$2.00.

## The only patented cut-out on the market with a revolving two-way valve

At all good jobbers. Ford price \$3.00, complete with foot pedal, pulley and cable. Ford price, with Dash Control, \$4.00. Larger sizes in proportion—Dash Control can be purchased separately.

Write for interesting booklet—shows proper size testing valve to use on any car.

GOODRICH-LENHART MFG. CO.  
HAMBURG, PA.

Can't Stick--  
Jam--Chatter  
or Rattle

# Goodrich

## MOTOR TESTING

# Valve

Replacing Old Style Cut Out





*Extension Screw Stand gives an additional height up to 7 inches and enables obstructions to be avoided in applying lift directly to frame bolster of car.*

## It's lots easier *with a* **WEAVER Hi-Lift Jack**

**E**ASIER to lubricate springs, replace broken spring leaves and worn shackle bolts and attach shock absorbers—easier to elevate cars to a convenient height for inspection and repairs—easier to unload double deck shipments of cars—easier to transport truck wheels about the shop with the aid of the Truck Wheel Attachment (which can be secured at a nominal additional cost)—easier to handle countless other jobs that come into your shop every day.

The Hi-Lift Jack possesses an extreme range of lift of from 7 inches to 45 inches. It is simple in operation and ruggedly constructed to handle burdens up to 3,000 lbs. The worm gear construction of the lifting arm makes it impossible for the load to be accidentally released.

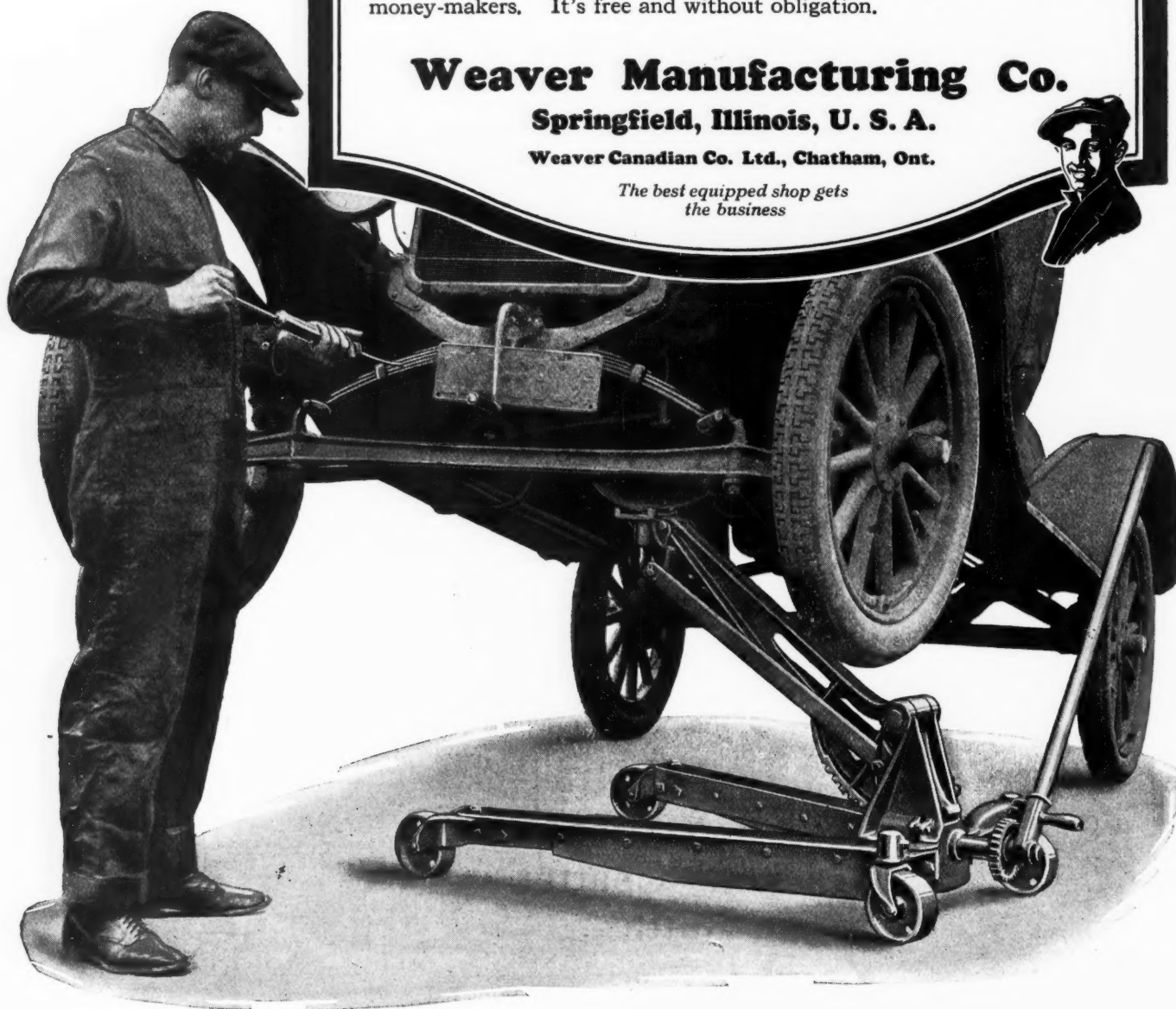
If you are interested in making more money on repair work this season, write for catalog describing this and thirty other Weaver money-makers. It's free and without obligation.

**Weaver Manufacturing Co.**

**Springfield, Illinois, U. S. A.**

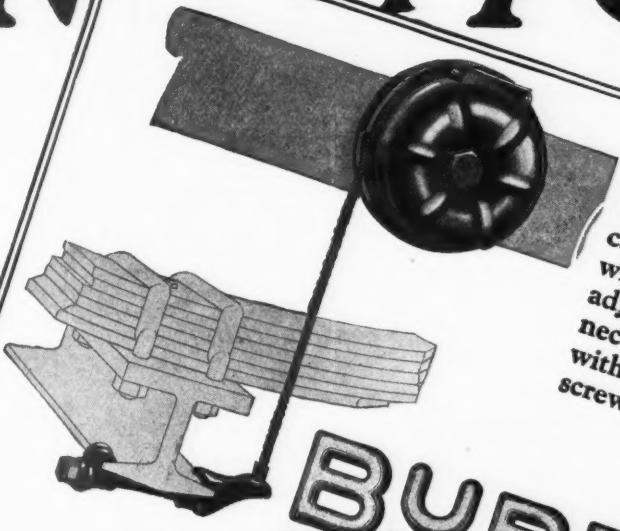
**Weaver Canadian Co. Ltd., Chatham, Ont.**

*The best equipped shop gets  
the business*



# THE SATURDAY EVENING POST

May 17th  
Issue



You  
can make  
whatever  
adjustment  
necessary  
with a  
screw driver

**BURD**  
GILMAN  
SHOCK ABSORBER

*The Perfect Snubbing Device  
With The Steel Cable*

**BURD HIGH COMPRESSION RING CO.**  
"Makers of the Famous Burd Piston Rings"  
ROCKFORD, ILLINOIS, U. S. A.

First of a Series of  
Saturday Evening Post  
Advertisements

## The Success of the Year!

No automotive product ever offered to the trade has won such instant success as the Burd-Gilman Shock Absorber. Its sales record is unequalled. Its record for performance has never been equaled. It has stood every test and you can safely recommend Burd-Gilman Shock Absorbers to your customers because every set is fully guaranteed to give efficient service.

The Burd-Gilman offers motor car dealers especially an exceptional opportunity to increase their profits.

**Write for Circulars and Dealer's Discounts**

DISTRIBUTORS EVERYWHERE

**BURD HIGH COMPRESSION RING CO., Rockford, Illinois**

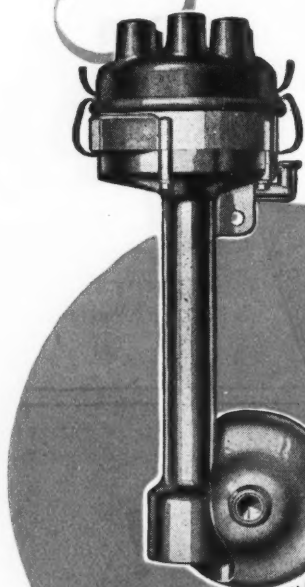
"Makers of the Famous Burd Piston Rings."



# ATWATER KENT

*Philadelphia*

## The Ford Equipment Market



**N**O OTHER replacement unit offers to automotive equipment dealers greater possibilities for sales and profits than ATWATER KENT Ignition for Ford cars.

There are over 5,000,000 Fords in use: — a tremendous market in every community. ATWATER KENT Ignition, Type LA, has proven in service on over 100,000 Fords that it increases the efficiency of the Ford motor: it is priced right for quick sales. Easily installed without removing the radiator.

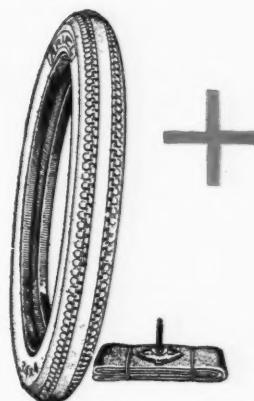
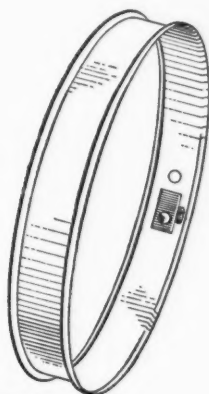
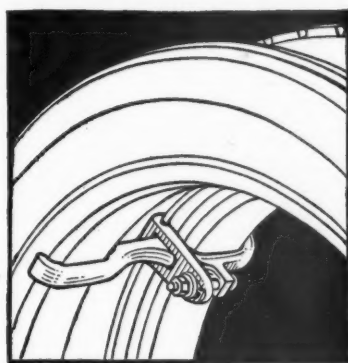
**Price \$10.80** Including cables and fittings



ATWATER KENT MANUFACTURING COMPANY, PHILADELPHIA, PA.

4957 STENTON AVENUE

*Makers of*  
THE WORLD'S HIGHEST GRADE IGNITION  
STARTING AND LIGHTING



# STONE

## TIRE CARRIERS

### —the Treble-Profit Item

Selling Stone Tire Carriers is quick and easy work. Customers know there is nothing like them, so good dealers know there is no carrier so easily sold.

But you don't stop there. When you make a sale of the Stone Tire Carrier, it automatically makes an opening for 3 more sales—a rim, a tire and a tube.

Do YOU know Stone Tire Carriers? Each carrier is composed of three separate, sturdy units that lock tight to the regular "spare", allowing the motorist double spare protection minus all rattle and chafing. No ropes or straps. No interference with tire covers, tail light or license plate. On or off quickly. Silver finished, of electro-galvanized iron.

Fits all cars, including balloon equipped.

Stone Tire Carriers "have the call" from motorists everywhere. Universal type, for 3½ in., 4 in. and 4½ in. S. S. rims, \$3.00 list per set; Ford clinchers, \$2.50 list per set; Ford Lug type, \$1.00 list per set.

### STONE RIMS AND RIM PARTS

Stone Rims are standard for every car. Stone Rim Parts—lugs, bolts and nuts—fit every car, and are a steady source of profit.

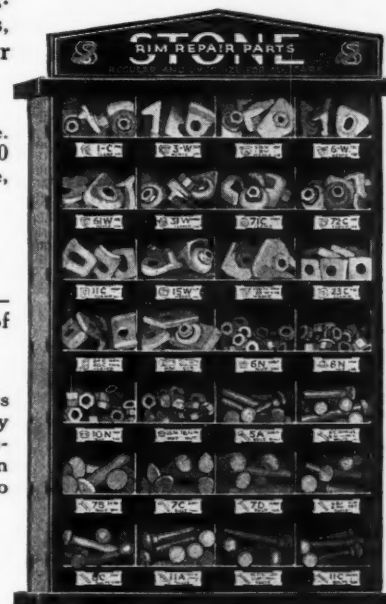
#### TO SELL THESE ITEMS—

Display them! And we have devised for you efficient sales helps that will keep Stone Products always in sight. They consist of the Stone Rim Display Rack, Stone Rim Parts Cabinet and Rim Parts Display Board. The Cabinet is free when you send in your order for a rim parts assortment. Board also is free.

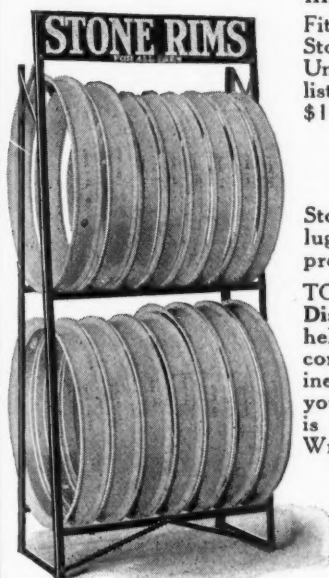
Write your jobber NOW for assortments and prices.

**The Stone Manufacturing Co.**

1502 South Michigan Avenue, Chicago  
135 Wooster Street, New York

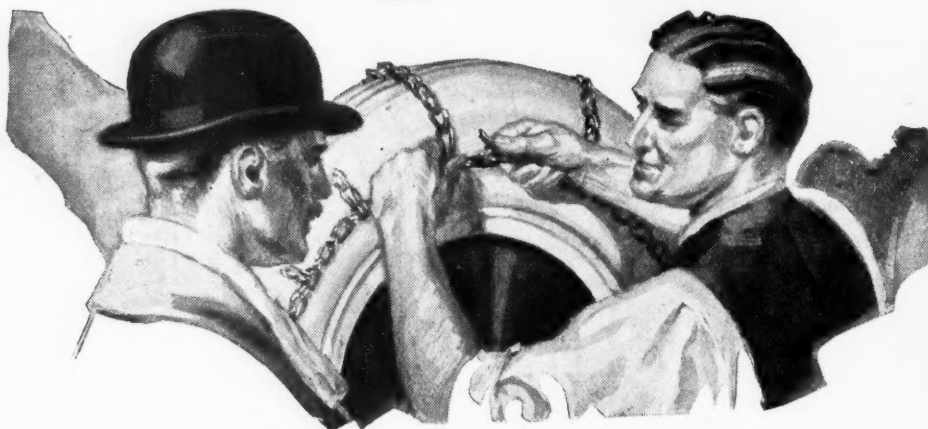


**FREE**





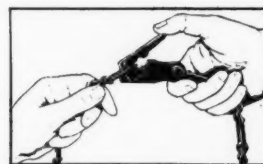
# Show the Fastener *and* Clinch the Sale



**W**ITH McKay Tire Chains you can turn a luke-warm prospect into a buyer in a moment—open the fastener and open the sale, close the fastener and close the sale.

Demonstrate how easily anyone can lift it open or snap it shut. You cannot fasten it other than the right way. Show how the motion of the wheel and the creeping of the chain hold the fastener shut so that McKays cannot come off while in use. Explain that McKays can be put on or taken off in a moment, by anyone.

The McKay fastener is the simplest, surest, easiest-to-use fastener made. Show it, and clinch the sale.



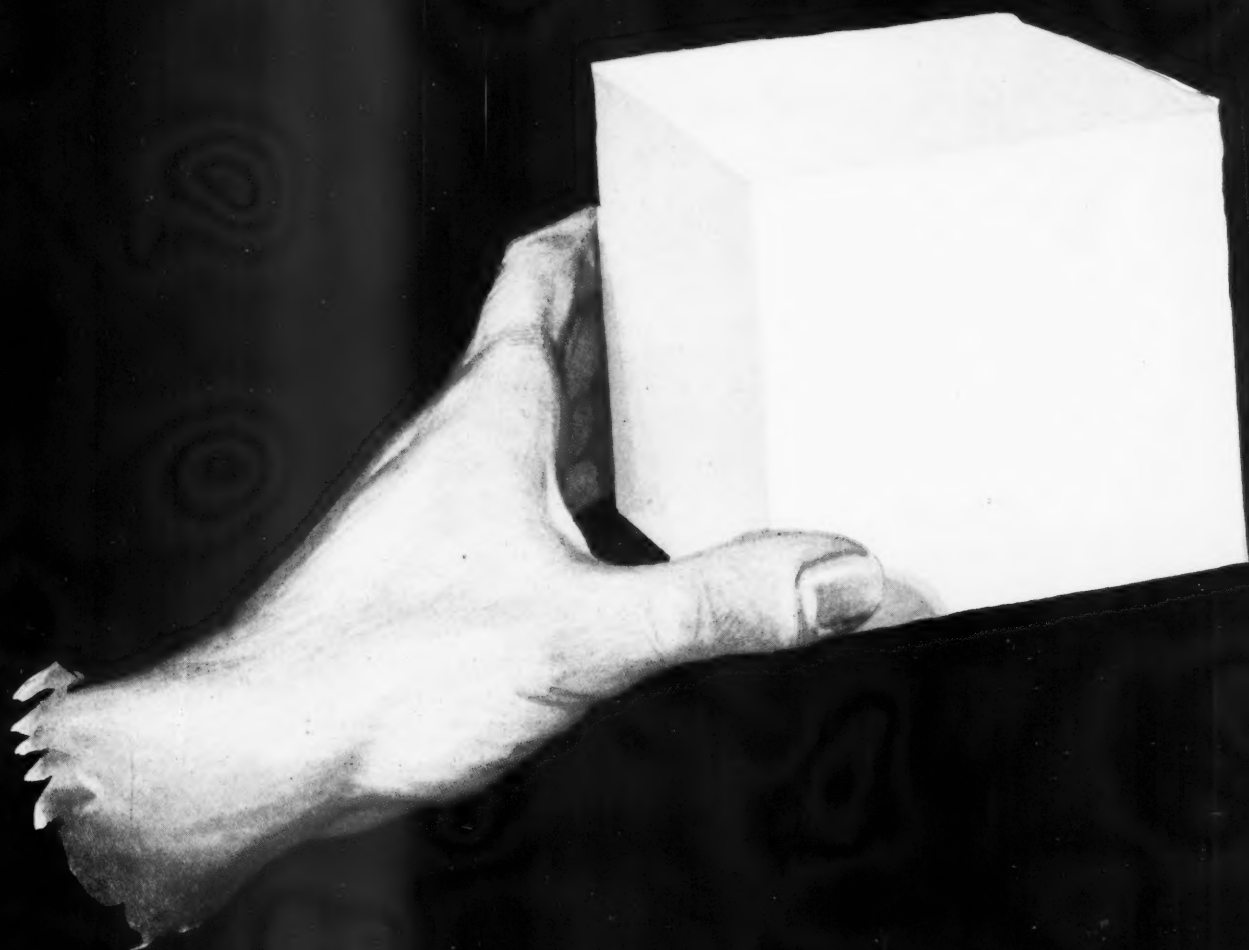
UNITED STATES CHAIN & FORGING COMPANY  
Union Trust Bldg., Pittsburgh, Pa.  
*Makers of Complete Lines of Chains for all  
Commercial and Industrial Purposes*  
Plants at York and McKee's Rocks, Pa.; Columbus and  
Marietta, O.; Huntington, W. Va.



# McKAY TIRE CHAINS

# McK

# 30







## American Hammered Piston Rings

*W*HEN our dealers began doubling and trebling their 1923 orders, during the first two months of 1924, it was indeed a wonderful endorsement of our price cut to 30c.

We had expected most of our dealers to recognize the great opportunity. For we believed we had established the lowest price ever placed on a high grade piston ring in the history of the industry. We knew the liveliest jobbers and dealers throughout the country would immediately get the point.

But this first rush of orders for immediate shipment has been followed up by even greater volume of steady business.

It surpasses the normal rush of the spring overhaul and regrinding season. It has taxed the day and night production facilities of our large factories in Baltimore. It has set a brand new volume mark in piston ring sales.

American Hammered is the leading replacement ring in the country. If you want proof of the fact—interview personally the best jobber in your territory—ask any American Hammered dealer about his net profits—read the actual words of some of our representatives, printed on the next page. It is the most convincing testimony obtainable.

Our service station proposition will be sent to reliable dealers upon inquiry. Write to Department M.

American Hammered Piston Ring Company, Baltimore, Md.

Factory Stocks { BALTIMORE  
Bush and Hamburg

CHICAGO  
2133½ S. Michigan Avenue

SAN FRANCISCO  
931 Larkin Street

*American Hammered is one of but three or four makes of piston rings to be obtained in a complete line of sizes and oversizes—from the tiny air compressor rings, through every motor car and truck size, to the huge rings for ocean-going Diesel engines ~ ~ ~ ~*

# Further Endorsement from the Trade

American Hammered dealers are so enthusiastic about their sales, their profits and the satisfaction of handling these fine rings, that they are continually writing us unsolicited letters of endorsement. Here are just a few of the recent excerpts—in their own words:

"We like your rings and recommend them on all jobs in our shop. This is an American Hammered Ring garage."

"The price is wonderful—you certainly are giving us dealers a very fair deal."

"We intend to stock your rings heavily and push them hard."

"We both will profit by your present price move."

"You are certainly to be complimented on your hearty cooperation with your dealers."

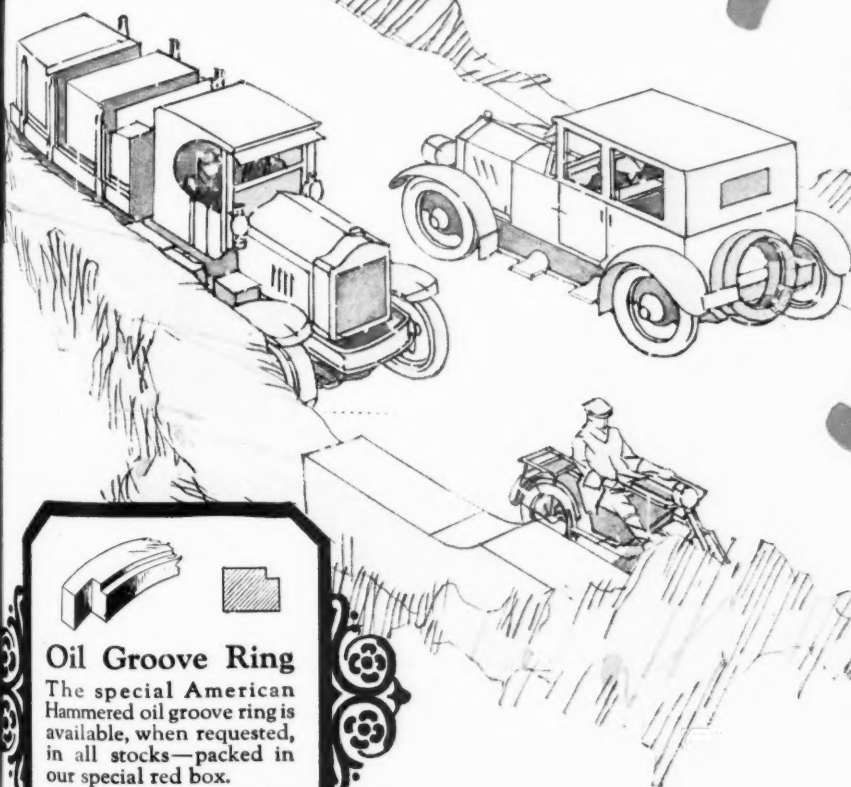
"Rush shipment—we have sold many of your rings in the last few days."

"We are experiencing great results with your oil groove rings."

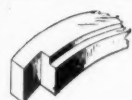
"American Hammered Rings are gaining in popularity. We look for big business this year."

"Very enthusiastic about the price drop and expect greatly increased business."

"It is gratifying to do business with so square a Company as yours."



and  
up



## Oil Groove Ring

The special American Hammered oil groove ring is available, when requested, in all stocks—packed in our special red box.

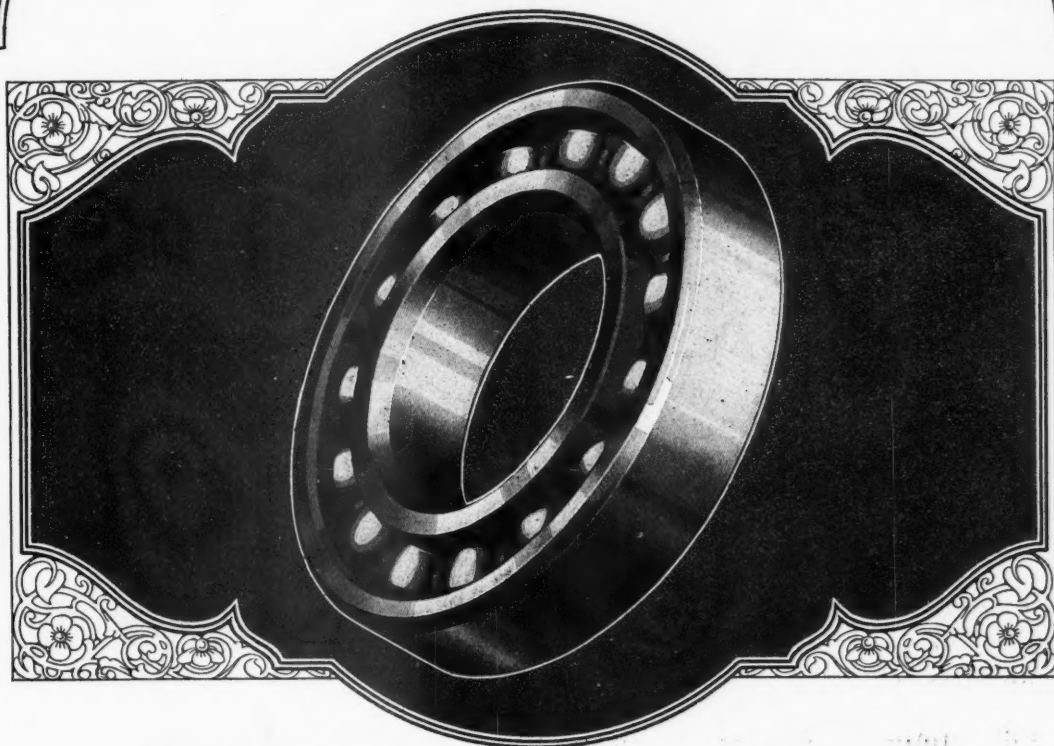
Just the thing for cylinders slightly out of round.

Same List Price.

Look  
for the  
BALL POINT  
HAMMER  
MARKS  
inside the  
ring







## What Keeps Cars New?

**I**T is becoming increasingly clear to the automotive industry that a permanently correct bearing mounting is only possible where shaft support and gear location is absolutely *constant*.

Any bearing which periodically requires adjustment for wear *cannot* give this constant support. Moreover, it allows gear teeth to wear in a series of different points as the original correct setting of the bearings loosens up with wear. Readjustment of that bearing can never replace the wear in the gear teeth made while out of adjustment nor

eliminate entirely the noise which has developed.

Since the New Departure Ball Bearing does not wear appreciably during the life of the mechanism it serves, and hence never needs adjustment, it gives cars these *permanent* characteristics,— quiet rear ends, transmissions in which gears mesh easily, and wheels which will not wobble.

And New Departures outsell because they excel in the job of keeping cars new.

THE NEW DEPARTURE MFG. CO.  
DETROIT      BRISTOL, CONN.      CHICAGO

# New Departure Ball Bearings



# You need only 4 sizes of

## *Climax* MUFFLER CUT-OUT · PRESSED · STEEL ·

### to fit 92% of all your "cut-out" customers

You can save 75% of your investment in muffler cut outs by stocking the Climax because you need only four sizes to fit 92% of automobiles made.

You will eliminate all loss by breakage in installation, too, because Climax is made of unbreakable pressed steel instead of breakable cast iron.

CLIMAX has other advantages that make sales easier and more satisfactory

- Control spring is away from heat area—insuring long life.
- control lever adjustable to six different positions.
- exhaust opening large and unobstructed—no sooting.
- warp proof and rattle proof—fit perfectly.

Spring time is tuning up time—Climax will tune up your sales. Order a dozen now in a neat display carton.

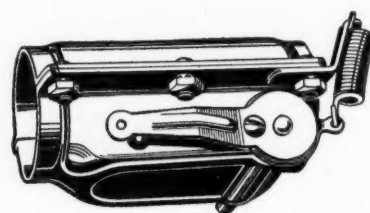
### Order from your Jobber

*or send direct to*

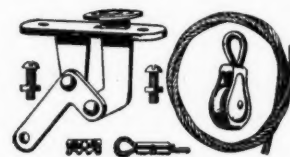
## Climax Equipment Co.

1827 San Fernando Road

Los Angeles, Cal.



Ford Special



#### Prices

Prices of the four sizes complete—  
Ford \$3.00; Chevrolet \$4.00; The  
4-in-1 Special (1½"-2") \$4.00;  
2¼" \$4.50.

Liberal discounts.

#### Display Stands

Effective sales creating display  
stands supplied FREE with every  
initial order of one dozen or more.

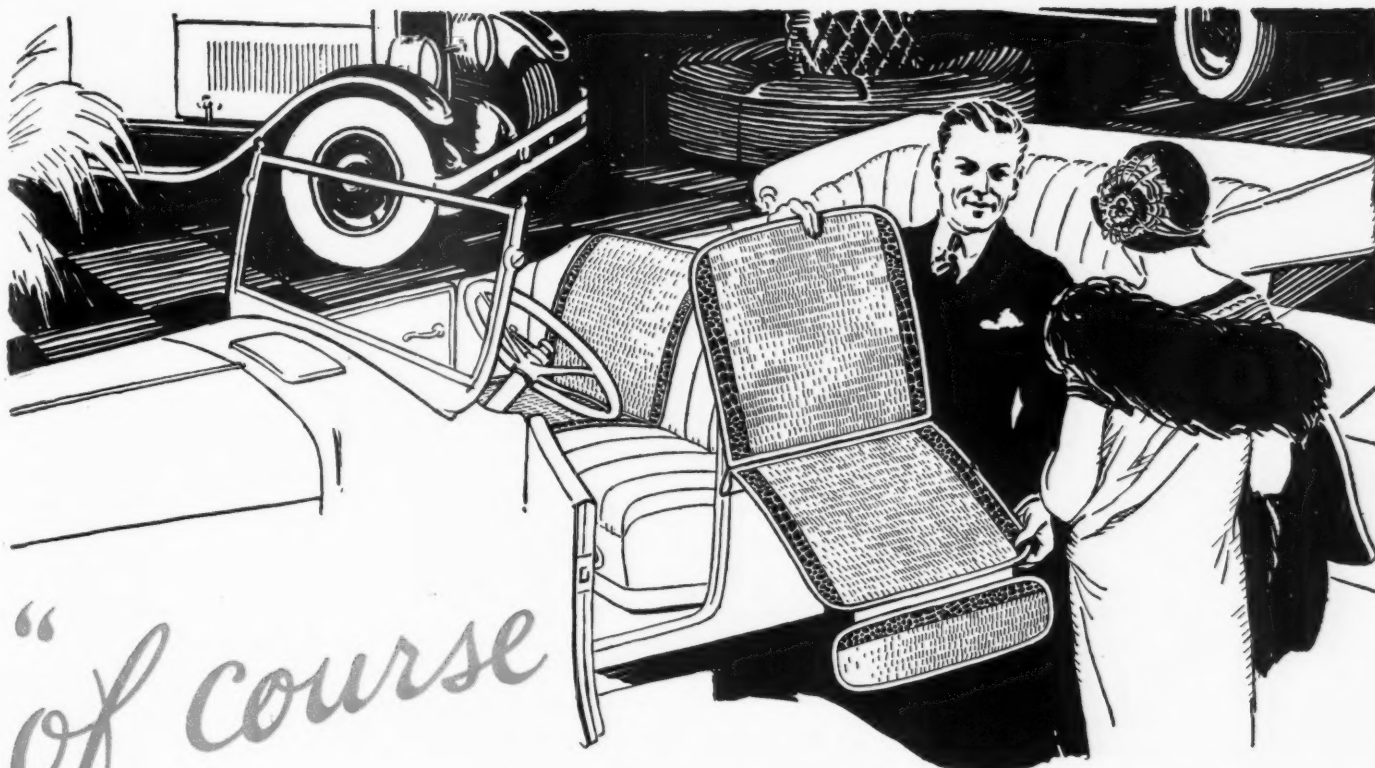
#### Automobile Dealers

Put Climax Muffler cut-outs on your  
sport models and used cars.

They have a wonderful effect on  
sales.

#### Freight Allowance

We allow freight on jobbers' orders  
of 100 lbs. or over.



*"Of course"*

You want a set of Wedford Evr-klean Seat Pads. They're wonderful protection for clothing and upholstery. We find that everyone who uses them wouldn't be without them."

## Sell Them When You Sell a Car!

### "A WEDFORD PRODUCT ALWAYS SELLS"

Wedford "Evr-klean" Seat Pads — Wedford "Rid-Ged Grip" Steering Wheel Tire—Wedford "Air-tites," valve cores and caps—Wedford "Anti-Rattlers" for car and house windows—and the new Wedford "STIMSONITE" Safety Tail Light Lens.

Every car you sell provides an opportunity to sell from one to four Wedford "Evr-klean" Seat Pads—and at an attractive profit!

Why not make this additional money? Sell them when you sell a car!

Motorists quickly see their advantages. Protection from wear, dust and dirt for clothing and car upholstery. Clean—cool—and attractive. As necessary for enclosed cars as for open cars. Winter and summer. Ideal for touring.

The DeLuxe and Standard models, now made larger in every dimension, are seat pads and seat covers, combined. Double service at one price. Easily removed. Easily cleaned. Made of select, flexible, long-wearing straw.

Start now—sell them when you sell a car! Get your stock in early. Dis-

tributed by jobbers everywhere. Write us direct if the nearest jobber cannot supply you.

Accessory dealers!

### It's Your Opportunity, Too!

Wedford "Evr-klean" Seat Pads are now in bigger demand than ever. Every car that stops at your curb means an opportunity for a sale. Your trade and the passing public are watching your windows. If they see these pads displayed many will stop and buy who would otherwise pass on without coming in to ask if you handle them.

With the thousands of new cars that will be on the road this spring think what you can make this profitable business amount to. Order from your jobber's salesman at once!

Retail Prices: DeLuxe.....\$2.00

Standard.....\$1.50

Handy.....\$1.00

The WEDLER-SHUFORD COMPANY, St. Louis, U. S. A.

# Wedford

## AUTOMOTIVE PRODUCTS



**Rickenbacker**  
A • CAR • WORTHY • OF • ITS • NAME

**“Rickenbacker  
Never Will  
Build Another  
Automobile  
Without  
4-Wheel  
Brakes”**

*B. F. Everitt*  
President and General Mgr.

**4 ~ Wheel Brakes**

# Rickenbacker

A • CAR • WORTHY • OF • ITS • NAME

And Rickenbacker cars will always be equipped with Internal Expanding, Mechanically Operated Brakes—because this system has proved by every test to be smoothest and most powerful; most uniform in operation; simplest to adjust and easiest to operate.

Rickenbacker Motor Company  
Detroit - - Michigan

*Sport Phaeton, \$1595*

*Coupe, \$2035*

*Sedan, \$2135*

*Prices are f. o. b. Detroit—plus war tax*

## 4 ~ Wheel Brakes



# Get this f

**A SALES HANDBOOK**

**The HOOK-UP**  
AS IT AFFECTS SALES AND PROFITS

**FREE**

This handbook on Buying and Selling. Write for your copy today. The edition is limited.

**NORWESCO**  
The Chemically Correct Line

Good buying is as essential as good selling. It will pay you to read this book as both are covered thoroughly in it.

# free handbook on merchandising!

**H**ERE is a little book on merchandising that is well worth reading because it emphasizes a phase of business which, though of vital importance to the dealer, is seldom stressed.

We think of efficient selling as the sure road to handsome profits but it isn't.

You can burn up your territory with sales effort and empty your store every two weeks, but if the merchandise itself has not been bought right and properly selected what does it all net you?

The man who knows how and when to buy has a running start on his less knowing competitors. Other things being equal, he can beat the field easily.

Besides laying down the fundamental principles of good buying, this handbook describes the Norwesco "Hook-up," or plan of buying, in which these principles are applied.

The handbook also covers the subject of selling in a concise and illuminating manner.

Write for your copy today. It's free.

The Northwestern Chemical Co.  
Marietta, Ohio



**Se-Ment-Oil**

the original self-acting Radiator Repairer. Millions of cans have been sold. Poured into the radiator it circulates freely throughout the cooling system, finding leaks almost instantly and sealing them with a firm elastic repair that is permanent. It is guaranteed harmless and non-clogging and if kept in the cooling system, guaranteed to keep it watertight.

The Norwesco line of automotive chemicals covers the whole range of automotive needs. Each product is of the highest quality and guaranteed.

SE-MENT-OIL — Radiator Repairer  
TOP AND UPHOLSTERY DRESSING  
MOHAIR Waterproofing TOP DRESSING  
KHAKI Waterproofing TOP DRESSING  
PENETRATING OIL for Springs  
VALVE GRINDING COMPOUND  
RIM AND GASKET SHELLAC  
BLACK AIR DRYING ENAMEL  
AUTOMOBILE ENAMEL  
TRANSMISSION COMPOUND  
CUP GREASE  
LINSEED AND OLIVE OIL SOAPS

# NORWESCO PRODUCTS

This Coupon is  
for your convenience — use it.

Northwestern  
Chemical Co.,  
Marietta, Ohio.

Gentlemen: — Please forward  
a copy of your Sales Handbook—The  
HOOK-UP.

Name .....

Address .....



# BUNTING

## BUSHING BEARINGS

PATENTED

### *Every Car Owner Knows Bunting Bushings*

**A**UTOMOBILE owners know what you are talking about when you say "Bunting Bushings." Full page advertisements in The Saturday Evening Post every month are telling the man who owns a car the story of Bunting Bushings and what they mean to the man who drives an automobile.

Are you making the most of this opportunity to increase the scope—and profit—of your service department. With thirteen million cars running, the bushing replacement item is not to be sneezed at.

Build this new story to your business on the firm foundation of Bunting quality and Bunting service.



**B**UNTING BUSHINGS represent the highest development of an industry that was old before the automobile was invented. For years before automotive service became a part of modern business Bunting Bushings were accepted by machinery builders and repairers as the very highest quality obtainable.

Every Bunting Bushing made today for replacement is the perfect product of an old established organization that has specialized for generations in the production of this important machine part. Every one of the millions of Bunting Bushings produced today is subjected to the closest laboratory control all the way through the plant.

Approximately three million Bunting Bushings are always in stock ready to ship. They represent the replacement needs of all popular cars, trucks, tractors, and motors. Bunting Piston Pin bushings and spring bolt bushings are packaged in strong convenient cartons. Leading automotive jobbers everywhere have stocks.

**AUTOMOTIVE JOBBERS**—Write for stock list 26 showing Piston Pin Bushings and stock list 116 showing Spring Bolt Bushings for all popular automotive vehicles.

The collage consists of several overlapping copies of the Saturday Evening Post magazine. The most prominent cover is dated May 15, 1924, and features a large advertisement for Bunting Bushing Bearings. The headline on this cover reads "The Difference Between Bushings and BUNTING BUSHING BEARINGS". Below the headline, there is a detailed illustration of a bearing assembly and a photograph of a man working on a machine. Another cover visible in the collage has the headline "BUNTING BUSHING BEARINGS SWEET-RUNNING" and features a photograph of a man playing a violin. The collage also includes various other mechanical parts and illustrations related to the Bunting Bearings advertisement.

These Saturday Evening Post pages are selling Bunting Bushings for the jobber and service man.

## THE BUNTING BRASS & BRONZE COMPANY

TOLEDO, OHIO

### BRANCHES AND WAREHOUSES AT

NEW YORK  
245 W. 54th St.  
Circle 0844

PHILADELPHIA  
1330 Arch St.  
Spruce 5296

CHICAGO  
722 S. Michigan Ave.  
Wabash 9153

SAN FRANCISCO  
198 Second Street  
Douglas 6245

CLEVELAND  
710 St. Clair Ave.,  
N. E.  
Main 5991

BOSTON  
36 Oliver St.  
Main 8488







# for real mechanics

The type D Bethlehem Wrench has proved itself to be admirably suited to the varied requirements of the busy automobile mechanic.

Its 23 sockets are only 1/32" apart in size. That means that burs and unevenness on the nut don't require filing—the next size socket will fit snugly and do the job perfectly.

This set will fit all nuts on all cars, ranging from 9/32 to 30/32.

BETHLEHEM SPARK PLUG CO.  
BETHLEHEM, PA.

E. H. Schwab, President.

**The Mechanics D Sets**  
Takes care of smallest generator nut up to largest nut on any car. Has 23 deep hexagon sockets, a regular L Handle, T Handle, drop forged ratchet handle, 3 short bars and a universal for close quarters. Packed in a husky box to withstand abuse. List \$12.50.

**For Car Owners**  
Bethlehem Wrenches are made up in sets of various sizes to fit the needs of car owners—packed in sturdy metal boxes. Prices range from \$1.00 to \$2.75.



We also manufacture Speed Brace Wrenches (14" or 20" length) and Tee Handles (6" or 12" length) for use with Bethlehem Sockets.

# BETHLEHEM

## WRENCH SETS



## For Practically All Reseating Jobs

this set contains the proper size reamer and pilot stem. Comes complete in a box with each stem place and each reamer post marked for each size. Set includes 10 Sioux Valve Seat Reamers and 4 Pilot stems in the following sizes:

1½ in. . 45°	1⅝ in. . 30°	1¾ in. . 45°	2 in. . 45°	2¼ in. . 45°
1⅝ in. . 45°	1¾ in. . 30°	1⅞ in. . 45°	2⅛ in. . 45°	2½ in. . 45°

Pilot Stems ⅝-in., ¾-in., ⅞-in., 1-in.

*Increase shop production and profits by reaming pitted valve seats before grinding.*

## VALVE SEAT REAMER SET

Ask Your Jobber About It

ALBERTSON & CO.

SIoux CITY, IOWA





# Let This Salesman

OAKES  
LOCKS  
are fully  
protected  
by patents.

**PRICES:**  
OAKES Spare Tire LOCKS, \$5 (Fords, \$4)  
OAKES Spare Wheel LOCKS, \$5 (Bar-Arm Type, \$6.50)  
Liberal Discounts to Jobbers and Dealers.

# Help Pay Your Rent!

THERE'S no limit to the number of OAKES LOCKS you can sell. Every car owner—every new car buyer—is a red-hot prospect!

Owners want real theft-protection for spare tires and spare wheels. They are tired of clumsy "make-shifts"—rattling chains, ugly cables, rusty padlocks. They want the OAKES LOCK because it is designed right, built right, priced right.

Put this salesman at work—this handsome OAKES display stand. Car owners will see it, examine the locks, and then buy. This attractive display stand—for one, two or three locks—supplied FREE with your order for 6 or more OAKES LOCKS. Dealers: If your jobbers cannot supply you promptly, we will ship direct.

THE OAKES CO.  INDIANAPOLIS

Established 1910

*Oakes Locks are Standard Equipment on 15 Makes of Cars*

## MAIL THIS COUPON TODAY

THE OAKES CO.  
3019 Roosevelt Ave. Indianapolis, U. S. A.

Gentlemen:—

We are ☐ jobbers.

We are ☐ accessory dealers.

We are ☐ dealers } for \_\_\_\_\_  
                                  ☐ distributors }

automobiles. Please send your proposition and free copy of "The OAKES Selling Plan".

FIRM NAME \_\_\_\_\_

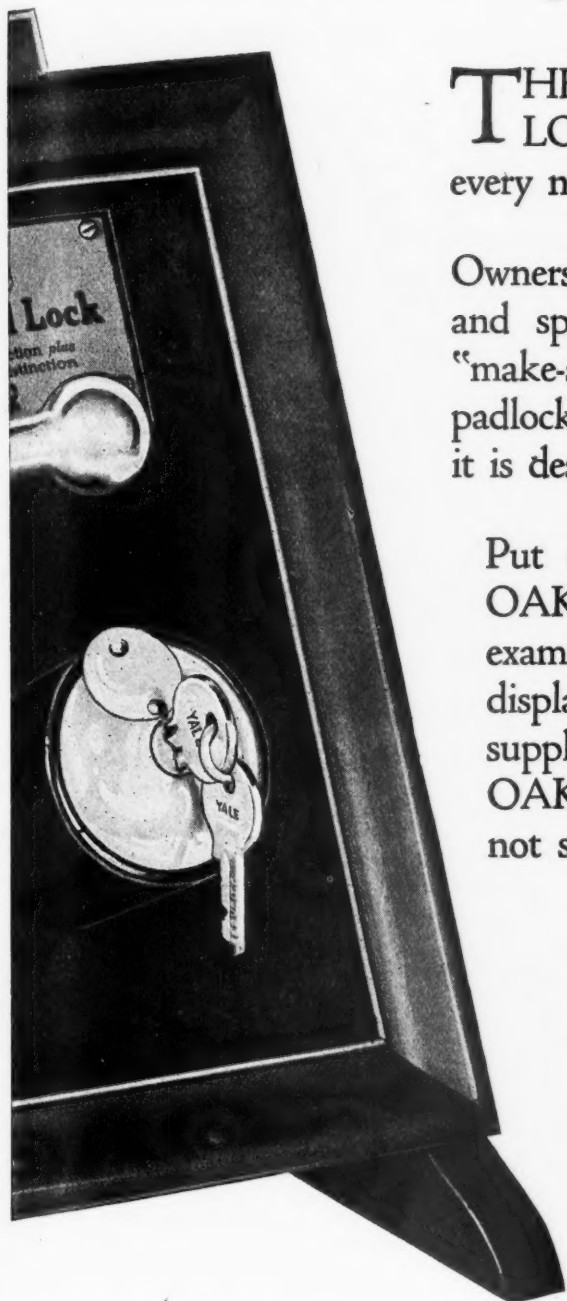
ADDRESS \_\_\_\_\_

Signed by \_\_\_\_\_ Position \_\_\_\_\_

MA

### JOBBER:

If you do not have OAKES LOCKS, wire us at once for samples and full details.







## RAIN—RAIN—RAIN—PROFITS!



**D**RIZZLE, shower, or down-pour—all music to the ears of the Folberth dealer! Thousands of automobile owners, driving behind rain-blurred windshields, need and *will buy* Folberths. *Sell them!*

The Folberth Automatic Windshield Cleaner is a *necessity*, not an accessory. 36 leading automobile manufacturers have adopted it as standard equipment; motor bus lines, hydroplanes, electric traction companies are using it. Nearly a million are now in service.

The Folberth operates on the surplus suction of the motor. Not being electrical, there is no drain on the battery; no wires to short circuit; no "come-backs" and "after-servicing" costs to eat up your profits. When you sell a Folberth it *stays* sold!

Place your order now for a supply of Folberths. Get the new Folberth "Parts-kit," the handiest and most compact service outfit ever offered the trade. It makes a handsome counter display and boosts your sales of Folberth parts. A set of installation and adjustment tools is given *free* with each "Parts-kit." Ask for the large window display and a full supply of sales helps. Cash in *now* on the ever growing demand for Folberths!

*If your jobber cannot supply you immediately with Folberths, Folberth "Parts-kits," and the many sales helps made for you, write us direct.*

THE FOLBERTH AUTO SPECIALTY CO.

CLEVELAND, OHIO

# FOLBERTH

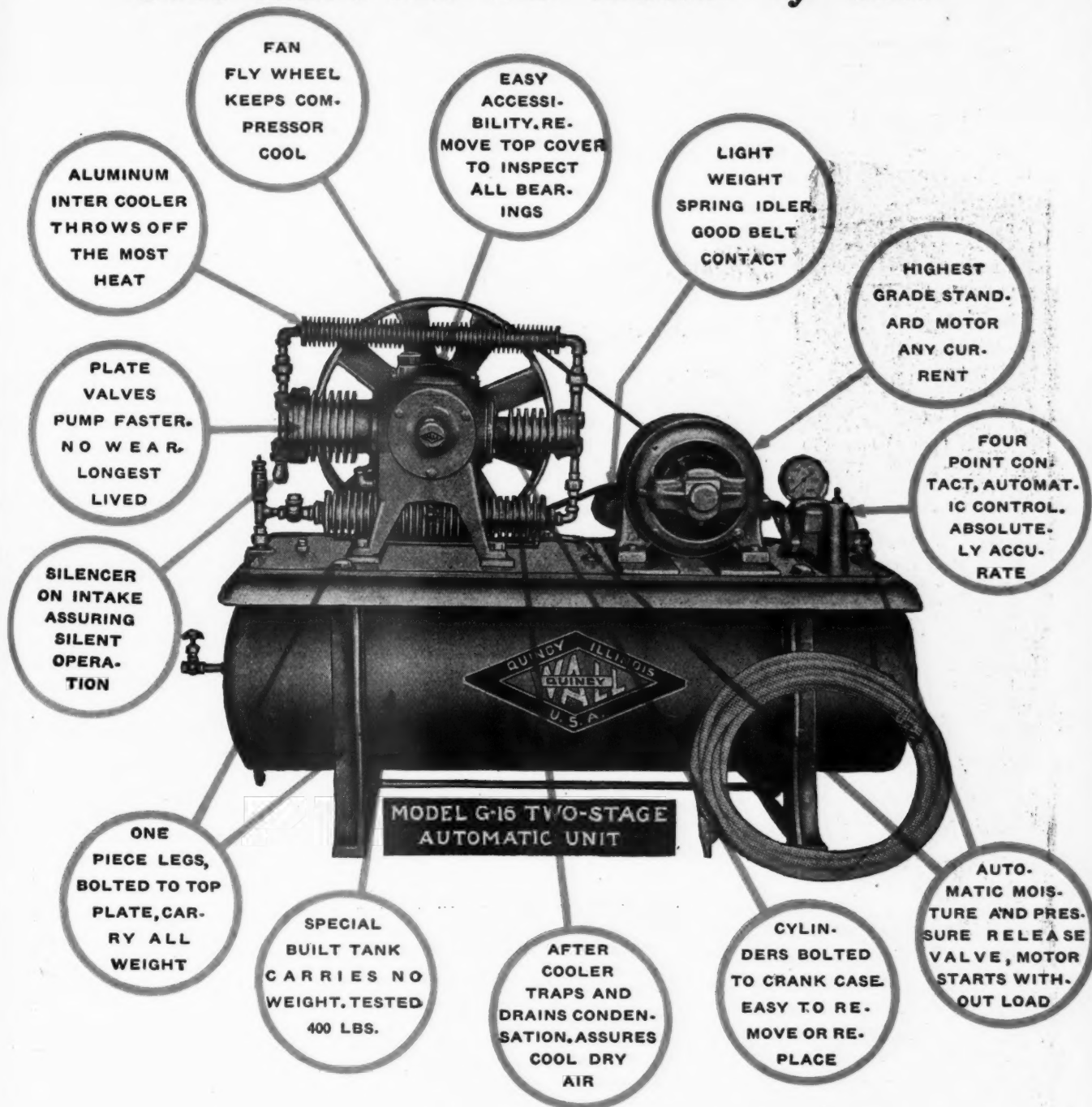
*Automatic*

## WINDSHIELD CLEANER

*"It Cleans While You Drive"*

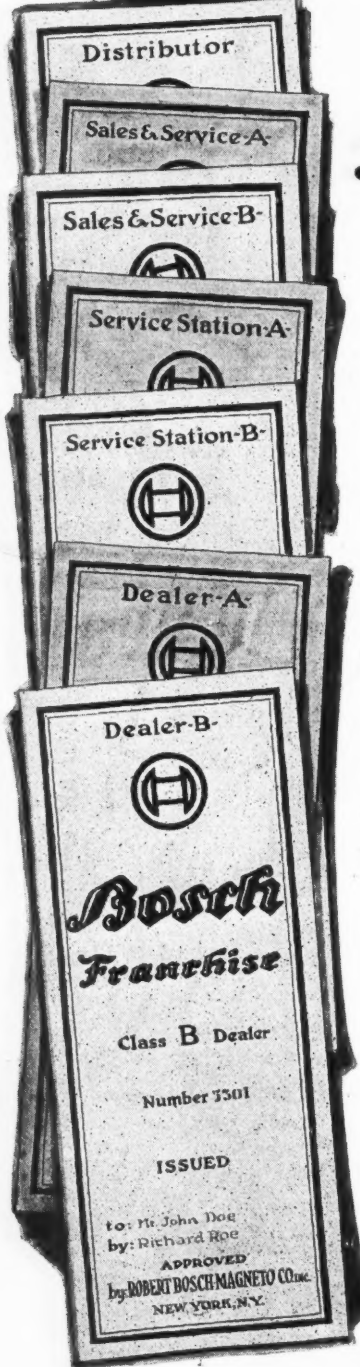
# QUINCY MASTER BUILT AIR COMPRESSORS

*Give More Air Per Dollar of Cost*



*Write Today for Catalog and Price List*  
**Wall Pump and Compressor Co.**  
 217 Maine St. Quincy, Ill., U. S. A.

*Specialists in Small Air Compressors and Vacuum Pumps*



## Hundreds of Distributors, Dealers, Service Stations, Garage Owners and Repairmen

have sent for details of the Bosch Selling Franchises. *You* should do so immediately in your own interest.

### *The Seven Bosch Franchises*

a specific Franchise for every specific Selling or Servicing purpose mean large profits, prestige, sales expansion and business permanency for you.

The Bosch sales power and your Bosch Franchise are an invincible combination.

Write or wire for details now—before some other farsighted organization in your territory does. Briefly state your qualifications—whether yours is a Selling or Servicing organization—or both, and the territory now covered by you.

### ROBERT BOSCH MAGNETO CO., Inc.

OTTO HEINS, President

109 West 64th Street

New York

Chicago Branch: 1302 South Wabash Avenue

Sales and Service Stations in Principal Cities the World Over

The genuine *original* Bosch means Robert Bosch only.

#### ROBERT BOSCH PRODUCTS:

Magnetos

Horns

Longlife Spark Plugs

Generators

Magneto Generators

Fordson Magneto Attachments

Ford Magneto Attachments

Starters

Switches

Hydrometers for Radio Batteries

Impulse Couplings, etc.



# The Tire That Has No Competition



Time to Re-tire  
Get a Fisk

Trade Mark Reg. U. S.  
Pat. Off.

**B**ECAUSE the Fisk Red-Top is distinctive in reputation—construction and in color, it has won a class of trade all its own.

No other tire to our knowledge has such a determined and loyal following. Red-Top users become permanent Red-Top customers. They are not interested in other tires. To them Red-Tops have no competition.

If you add Red-Tops to your line you will find they will not conflict with other tires because they have their own established trade. Get the Red-Top profits in your neighborhood.

Ask the Fisk salesman for more complete information.

*There's a Fisk Tire of extra value for every car, truck or speed wagon*

**The Fisk Tire Company, Inc.**  
**Chicopee Falls, Mass.**

## Sell Fisk Red-Tops



LIST  
**20¢** EACH  
Sizes over 5" in  
diameter or 3/8" in  
width 35¢

## Summer Time *is* Oil-Pumping Time

Touring begins. The roads invite speed. The drives are longer and the days hotter. The oil thins and trouble starts.

At first it may be just the slightest piston slap. Several hundred miles later, carbon, a missing motor, and a lack of power are noticed.

The car owner wants to use his car every day and he hates the idea of waiting for a lengthy overhaul job.

With Ramco Cushion Inner Rings you can stop oil-pumping, piston slap and the kindred troubles. Just install Ramcos along with a new set of piston rings. The customer is pleased with the prompt and satisfactory service and you practically double your piston ring profit. Thousands of Ramco Inner Rings are now giving satisfactory service in the best of motor cars. Avoid imitations.

*Your Jobber Sells*

# RAMCO

*Cushion*

# INNER RINGS

REG. U.S. PAT. OFF.

RAMSEY ACCESSORIES MANUFACTURING CORP.,

ST. LOUIS, MO.



**\$4.00**

## Two New- Big Selling *Stewart* Accessories for the Summer Driving Season

### *Stewart* SPOTLIGHT

Substantially made. Throws a brilliant light ray. A beauty in appearance, with its black enameled finish, offset by a polished nicked rim. As an additional feature, you can snap it out of the bracket, for use as a trouble light.

THE unusually large demand for these two Stewart motoring necessities comes from dealers who want a fast-selling quality line.

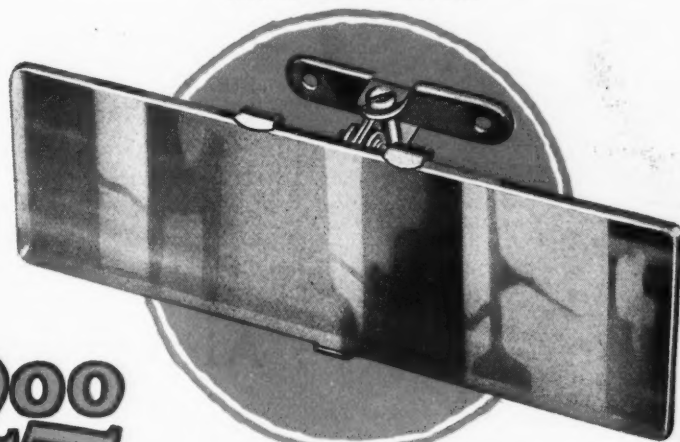
The low price appeals to all car owners, and the reputation of all products made by Stewart-Warner means quick, profitable sales.

Place these two products on your counter with price-tags alongside and see how easy they sell themselves.

STEWART-WARNER SPEEDOMETER CORPORATION  
CHICAGO - U. S. A.

### *Stewart* MIRROR

Seven and one-half inches long by two and one-half inches wide. Heavy, beveled-edge glass. Nickel plated bracket. Can be tipped up, down or to either side. Easily installed on open or closed cars.



**\$2.00**

Are you getting  
the Stewart  
Lever?

# *Stewart*

CUSTOMBILT ACCESSORIES

USED ON 9 MILLION CARS

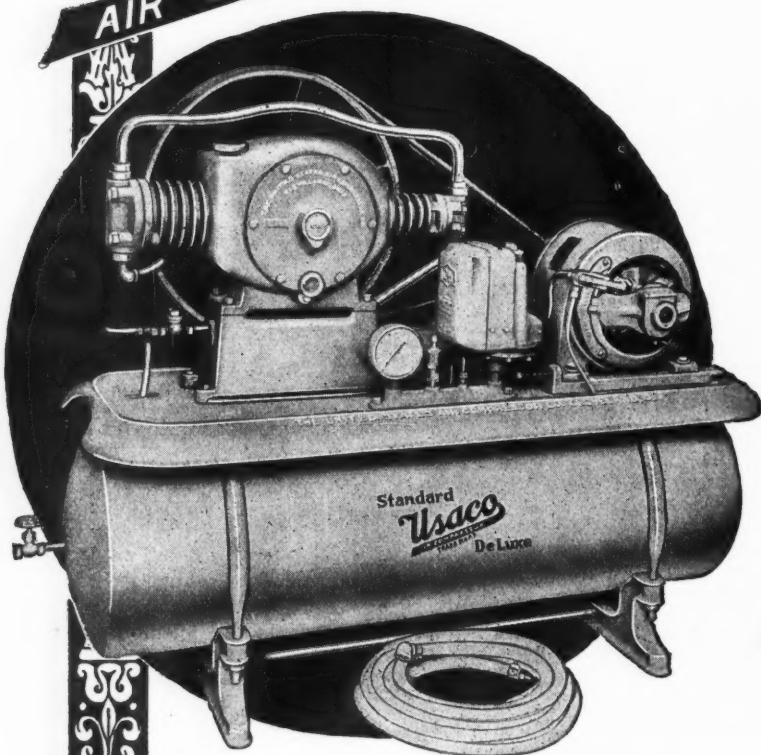


# Announcing REDUCED PRICES

ON ALL

Air Cooled **Usaco** Self-contained  
AUTOMATIC UNITS

**Usaco**  
U-Say-ko  
AIR COMPRESSORS



**S**ALES increased marvelously following announcement of the improved H. A. Compressor, making the first quarter of 1924, the greatest in the history of this company.

We specialize exclusively on tire inflating air compressors, and, in line with a natural law, our costs decreased as the sales increased.

And now, we are going to pass this saving along to purchasers.

Not even so much as a screw has been cheapened to permit this reduction. In fact, a double saving is available as you can now purchase a **better compressor than ever before** manufactured at prices that have never been equalled.

Garagemen! Tire Dealers! Oil Distributors! "Cash-in" on this attractive reduction. **Before you do another thing**, write for the new Usaco Catalog and the new schedule of prices.

**The United States  
Air Compressor Co.,**

5304 Harvard Ave.  
CLEVELAND, OHIO

**Pioneers - the World's Largest Manufacturers  
of Two Stage Tire Inflating Air Compressors**

# HUTTO

PORTABLE  
Cylinder Bore Grinder

**\$37.50**  
NET



## Prove It At Our Risk

Try the "Hutto" for 15 days. If it isn't as good as we say, your money will be returned.

Auburn, Buick, Dodge, Durant, Gray, Federal, Hupp, Jewett, Oakland, Paige, Stutz and Studebaker all recommend The "Hutto" Portable Cylinder Bore Grinder.

That is a wide open guarantee made possible by the superlative quality of the grinder itself—a grinder so good that Service Station Superintendents tell us it is the most accurate tool they have been able to buy.

It will handle scored and out-of-round cylinders in record time. It is simple to operate, accurate and fast. You do not need to pull the motor for first class cylinder re-finishing work. You will find it to be the most profitable equipment you can install.

Your jobber will tell you how good the "HUTTO" really is. He can tell you of a number of shops making money reconditioning cylinders with it. He will pass on to you our guarantee to him. Write him or us today for complete details.

## GRINDER SALES CO.

530 W. Fort St.

Detroit, Mich.

# And Now— Chrome Vanadium Service Wrenches



THE remarkable success of the Bonney \*CV\* Engineer and Tappet Wrenches has created a demand for other service tools that would give the same highly satisfactory performance.

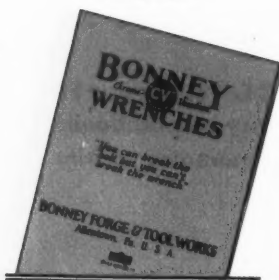
A light, thin jaw wrench is most desirable for inaccessible parts of the motor, but such construction has here-to-fore called for the sacrifice of strength in eliminating bulk. By scientific heat treating, drop forgings of that super steel *Chrome-Vanadium* have made these remarkable tools possible. After exhaustive tests to prove their worth, these wrenches are now ready for the market.

Good mechanics everywhere know and use Bonney Wrenches. We are certain that the new \*CV\* Service Wrenches will win instant approval.

Made in the U. S. A. by

**Bonney Forge and Tool Works**  
Allentown, Pa.

Also makers of Special Service Wrenches of Chrome-Vanadium, Carbon Steel Drop-forged Wrenches, Stillson Wrenches, Vises, and Drop Forgings.



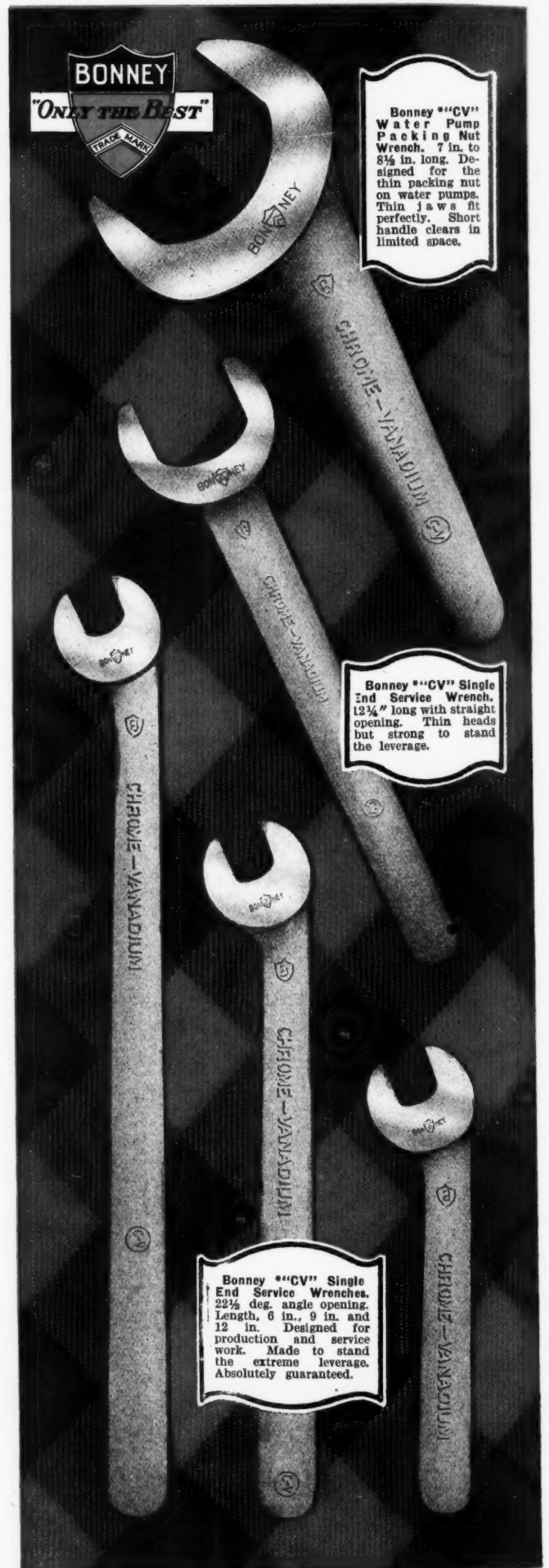
Send for this book, Catalog No. 24, just off the press. Gives full particulars on the new \*CV\* Service Wrenches. Also on the famous Bonney \*CV\* Engineer and Tappet Sets.

# BONNEY

Chrome-**CV**-Vanadium

# WRENCHES

\*CV\* is a Bonney Trade Mark Reg. U. S. Pat. Office.





# SAFE



ACTUAL SIZE



Price  
\$3.50

**AT LAST!** A Tire Lock that positively prevents tire stealing.

A compact lock, beautifully nicked, that you can hold in the hollow of your hand. Complete in itself. No chains, cables or straps to mar the tire cover or rattle on the rim and spring.

The BUTTERS LOCK for Tires is built on an entirely new principle. Made of highest grade carbon steel, hardened, and is saw-proof, file-proof and sledge-hammer proof.

Screws on the tire valve stem same as dust cover and locks automatically.

To unlock—insert key and give quarter turn.

Fits all makes of cars using ring type tire carrier where valve stem fits through hole in carrier.

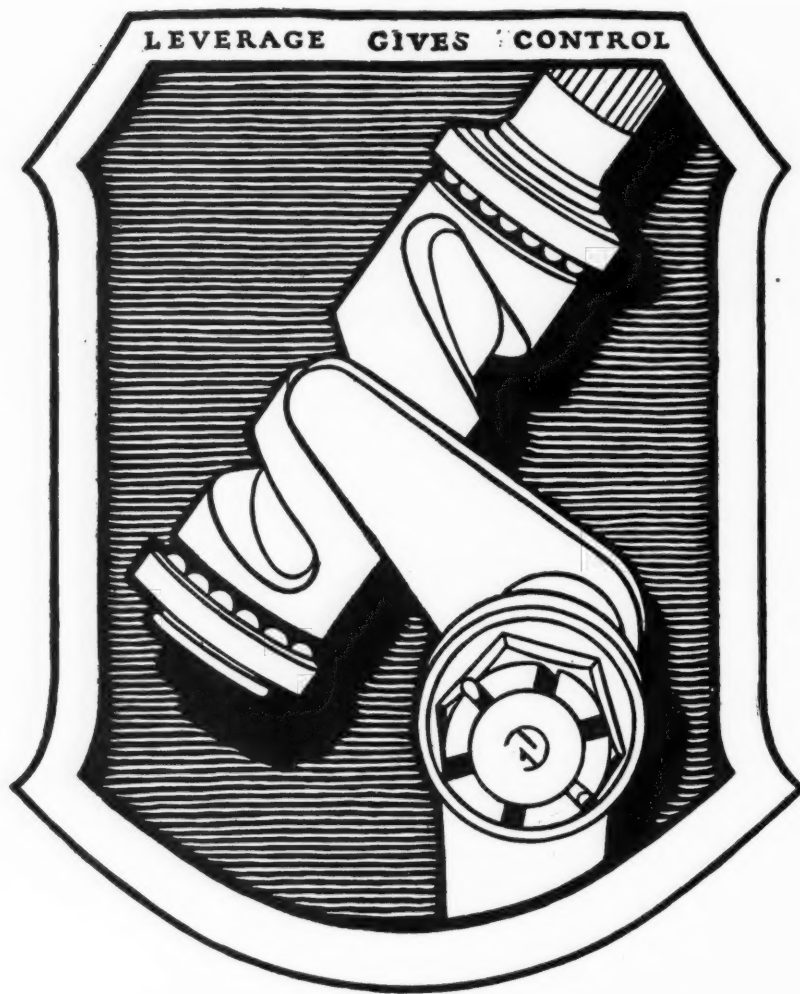
DEALERS—Have your Jobber supply you.

CAR DEALERS—There's an opportunity for you to sell the new car owner.

JOBBERs are invited to correspond regarding distribution.

**BUTTERS LOCK COMPANY**  
MONTGOMERY, ALA.

# BUTTERS TIRE LOCK




## WHY "FIGHT THE ROAD?"

A DRIVER does not have to "fight the road"—or become fagged in mind and body when the car is equipped with the Ross Cam and Lever Steering Gear. Ross does the "fighting"—and relieves all the strain. Driving ought to have a maximum amount of pleasure and safety. With Ross—it *does*. Drivers are finding it out.

*Write for the facts*

ROSS GEAR AND TOOL COMPANY, 400 Heath Street, Lafayette, Indiana

**ROSS**  
**CAM and LEVER**  **STEERING GEARS**  
**EASIER STEERING** **LESS ROAD SHOCK**



Over 4,000,000 motorists want Alemite Lubricating Service. There is a net profit of a dollar each time you lubricate a car. If you don't offer the service they will get it elsewhere—and perhaps you will lose their other business too.

## New Customers —how to get them at a profit!

Increase your trade with Alemite Lubricating Service. Over 4,000,000 motorists are looking for it. They go where they can get it. They pay for it. And they buy other things at the same time.

It costs you less to install Alemite Service than free air. And it pays you \$50 to \$250 a month and more. *net profit*—in addition to to other business it brings in.

Send today for this new book—*How to Go Into the Lubricating Service Business*. It gives you facts and figures on profits you can make. Tells how to install and operate lubricating service in garage, car dealer's or filling station. How to get business. How to advertise. Everything you need to know. It is yours for the asking. Write today. No obligation.

THE BASSICK MANUFACTURING COMPANY  
2662 N. Crawford Ave., Chicago, Ill.

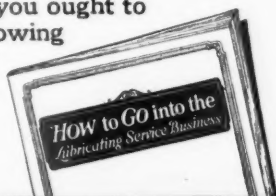
A Bassick-Alemite Product

# ALEMITE

"Reg. U. S. Pat. Off."

## High Pressure Lubricating System

**WRITE TODAY** for this **FREE** book of Lubricating Service plans. Facts you ought to know about the fastest-growing business in the motor world today. Just send the coupon. No obligation.



**No Obligation**

BASSICK MANUFACTURING CO.  
2662 N. Crawford Ave., Chicago, Ill.

Please send free copy of the book, "How to Go Into the Lubricating Service Business."

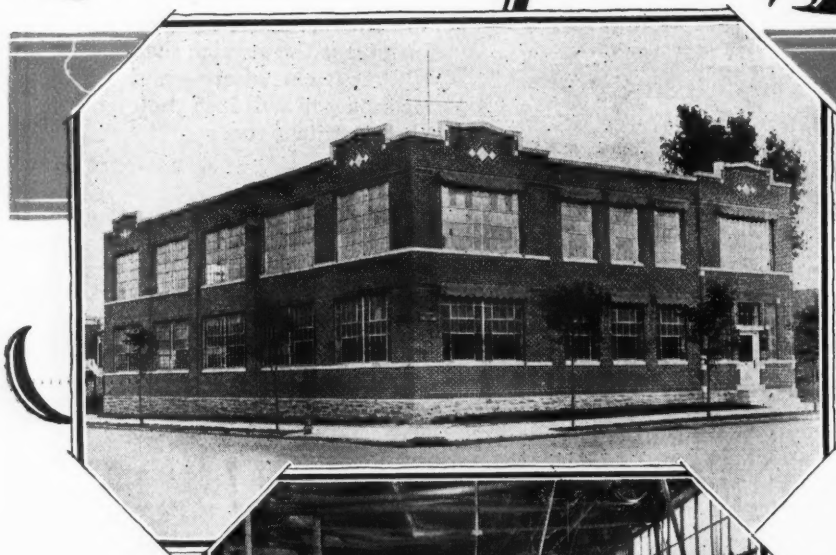
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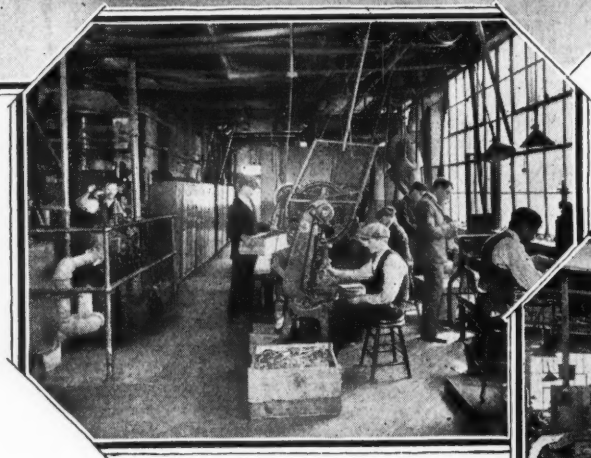
City ..... State .....



# To Meet a



A Theft Proof  
Night *and* Day  
Accuracy Under



## A Scientific Instrument

**S**AFE-T-STAT is the result of six years' research, experiments and tests for an instrument that will determine true engine temperature and register it in the logical and practical place—on the instrument board.

The final perfected model is an improved form of distant type industrial thermometer adapted to automotive use. It is first of all an accurate dependable heat indicator—yet handsome enough to grace the instrument board of the finest cars.

Watch for Safe-T-Stat national advertising in such journals as *American Magazine*, *Collier's*, *The Literary Digest* and *Liberty*.



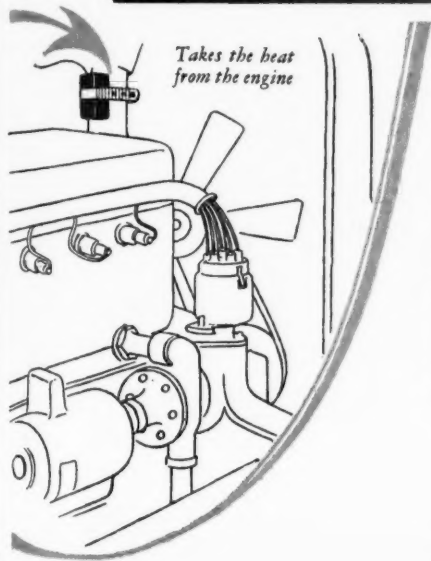
# National Demand

Heat Indicator  
Visibility  
Any Condition



## SAFE-T-STAT

**\$10.00**



Night or day, rain or shine, this engine heat indicator is directly under the motorist's eye to inform, warn and protect regardless of weather or radiator conditions. It is a device which tells true engine temperature at all times.

*Safe-T-Stat* consists of a graduated thermometer mounted on the instrument board, and actuated by an unique thermostat. It is installed permanently in a few minutes and operates indefinitely without expense, adjustment or repair. It fits any car. *Fool-proof, Theft-proof, Drop-proof, Requires no Lock.*

Thousands of motorists are demanding a heat indicator that is both dependable and visible at all times—*Safe-T-Stat* is that instrument. One model to sell—one size to stock—one price. If your jobber cannot supply you immediately, write us direct for detailed information.

**The SAFE-T-STAT Co., Inc.**

FACTORY  
57th and Westminster Ave.

PHILADELPHIA

GENERAL OFFICES  
Drexel Building

# 15 exclusive Holmes features

Holmes Automobile Wreckers have 15 vitally important exclusive features. We list them here. Your jobber knows all about them. Let him tell you how important they are to rapid, efficient and profitable wrecking work. Let him tell you, too, of the big profits that Holmes Wrecker users are pocketing. Your jobber has the facts and the proofs. Ask him.

## 1—100 Foot Operating Range.

Eliminates changing of tackle, blocking, stops and adjustments of line.

## 2—Don't Block Traffic.

No interruption of wrecking work. Road always clear for passing traffic.

## 3—Transfers Load to the Road.

Outrigger legs carry the load straight to the ground. The car body, springs and tires are saved from all extraordinary strain.

## 4—Easy Comfortable Operation from the Ground.

Holmes wreckers operate from either side and from the ground. No climbing on and off of service car.

## 5—"V" Tow Bars.

Bring in the wrecked car suspended without swinging or jamming into service car.

## 6—Swinging Booms

Give extreme working height. Lift the car instead of dragging it.

## 7—Double Booms.

One boom affords a perfect anchor and opposes the other boom handling the wrecked car.

## 8—Electric Lights for Night Work.

## 9—Two Speeds.

## 10—Full Floating Low Speed Power Shaft.

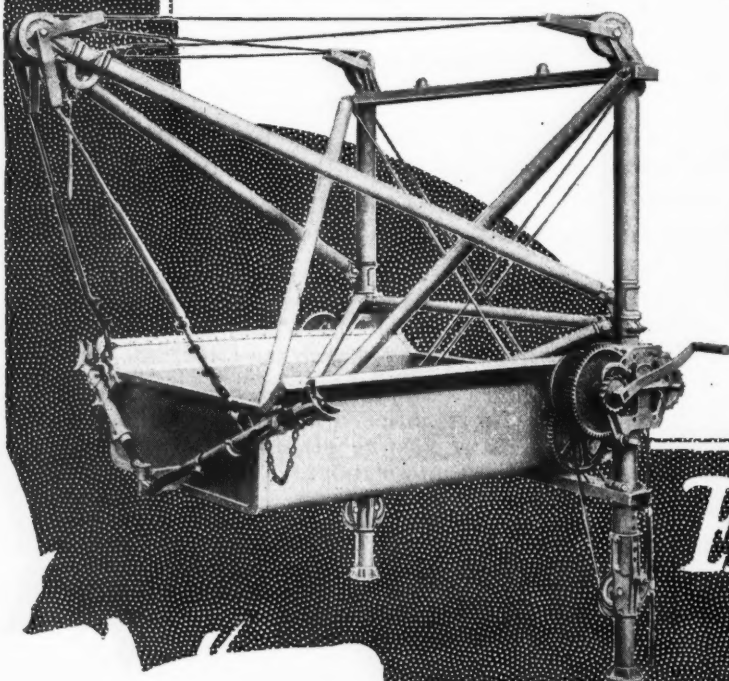
## 11—Independent Boom Control.

## 12—Perfect Balance.

## 13—Hand or Power Driven.

## 14—Steel Body.

## 15—Unusually Sturdy Construction.

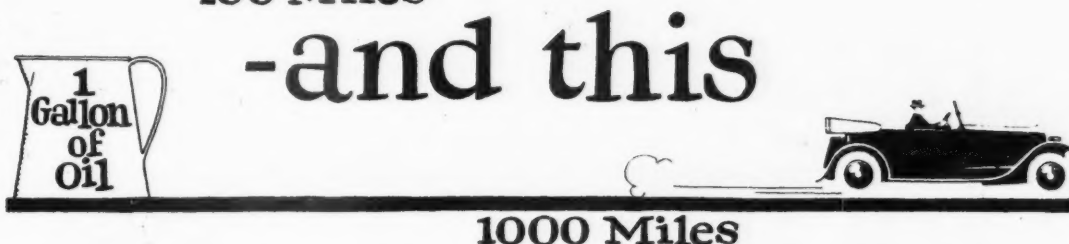
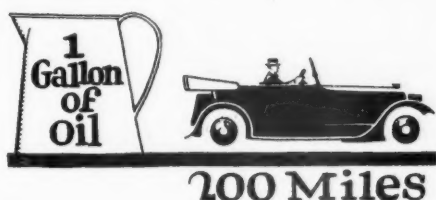


There are three fine Holmes Wreckers to choose from, all powerful and efficient. Try your jobber first. If he doesn't handle HOLMES WRECKERS, WRITE US.

**Ernest Holmes Co.**  
Chattanooga, Tenn.



# The difference between this



*means that you can sell nearly every car owner who drives into your shop—because you can guarantee 1000 miles to the gallon of oil with*



Sav-Oil Piston Ring Co.  
2056 Jackson Blvd.  
Chicago, Illinois

Sav-Oil Ring Mfg. Co.  
550 Golden Gate Ave.  
San Francisco, Cal.

H. C. Alexander  
612 W. Seventh St.  
Little Rock, Ark.

H. W. Blevins  
1532 Grand Ave.  
Kansas City, Mo.

C. H. Mountjoy & Co.  
211 Third Street  
San Antonio, Texas

Of course you know that most motor troubles are caused by excessive oil pumping due to faulty rings—but do you know the best way to make the huge volume of sales it offers to you? Here is the way—show the owners Sav-Oil rings—offer them at least 1000 miles to the gallon of oil—and **guarantee** it, too. Naturally they will buy.

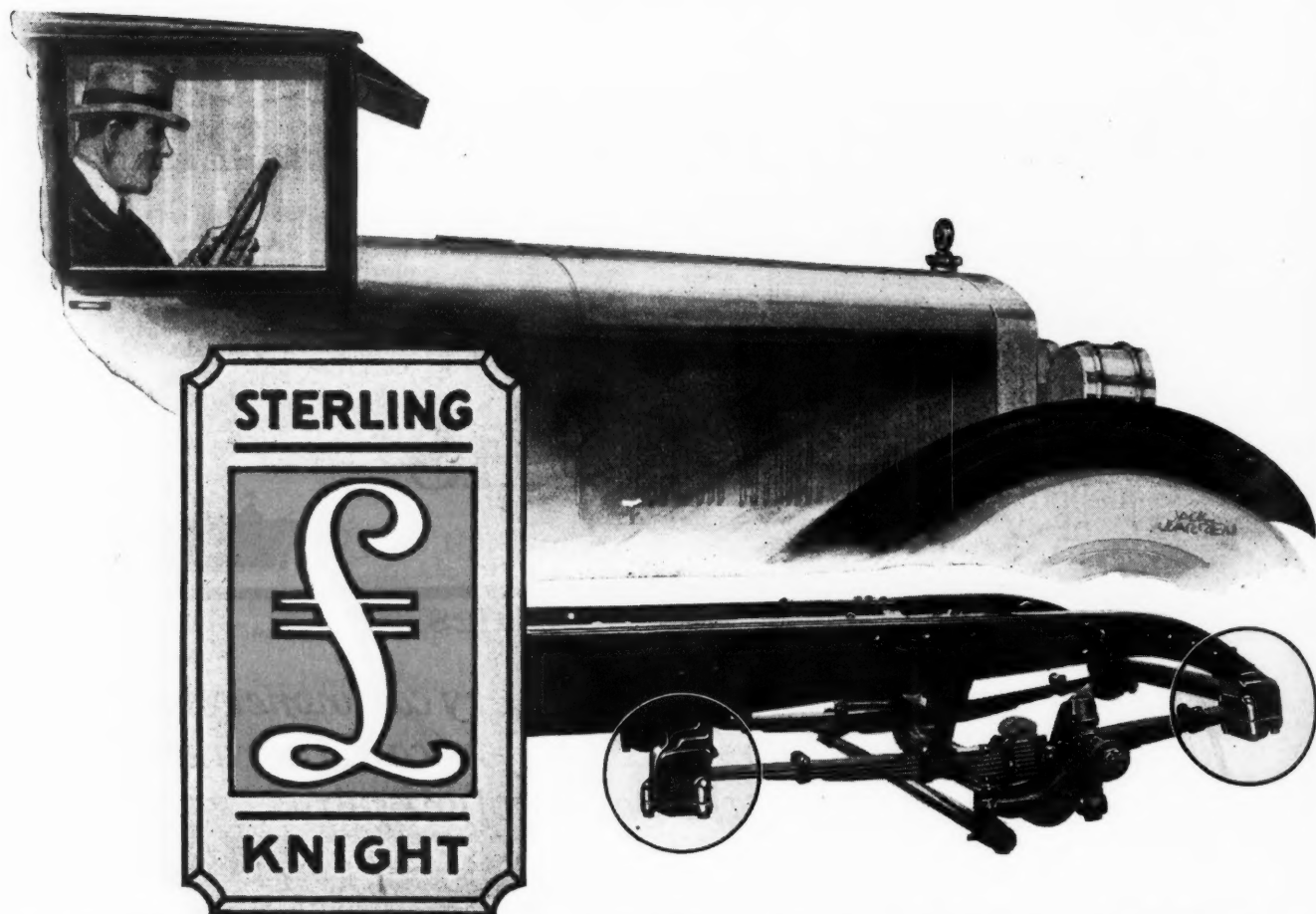
But that's not all—you'll give them a better running car and have a flock of mighty satisfied customers on your books! Send to our nearest distributor today for an assortment of sizes. You will be quickly convinced.

*Territories Open for Distributors*

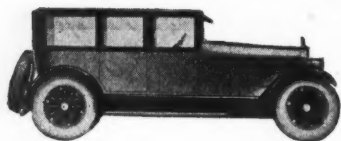
## The Sav-Oil Ring Mfg. Co.

1037 So. Figueroa St.

Los Angeles



## RUBBER SHOCK INSULATORS Go Big With the Car Buyer!



### Five Passenger Sedan

\$2800 at Warren, O. Perfectly fitted sills of ash. No squeaks nor rattles. Doors and glass close fitting and free moving.

Deep upholstered restful seats. Plenty of room. Commodious tonneau. Perfection Heater.

#### Other Models

4 Passenger Sport  
\$2250

4 Passenger Brougham  
\$2750

5 Passenger Phaeton  
\$2150

**T**HE advantages of RUBBER SHOCK INSULATORS are so plain to see that this feature alone is a very important factor in closing sales.

Instead of using shackles and pins at the spring ends—the springs of the Sterling-Knight are anchored to the chassis in blocks of live, resilient rubber. These rubber blocks are extremely durable, rarely showing any evidence of wear. They are compressed onto and hold the spring tightly and at the

same time allow free flexing. They need no lubricating. They provide a noiseless, trouble-free joint. They completely smother the flow of minor vibrations which tend to crystallize the frame and they add much to riding comfort.

The RUBBER SHOCK INSULATORS plus other mechanical betterments plus Pete Sterling's great "Knight Type" Motor plus fine body work—give to the Sterling-Knight a potentiality for large sales.

It will pay you to inquire about the Sterling-Knight franchise.

THE STERLING-KNIGHT COMPANY  
Warren, Ohio

# STERLING KNIGHT

*The Popular Priced Knight Six*



## Balloon tires require Exact Pressure

# Air-O-Meter

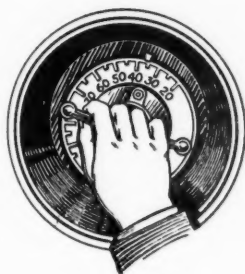
## is Equipped with Balloon Tire Pressure

Balloon Tires are built for riding comfort, car protection, fuel and mileage economy. Unless these low pressure tires carry **exact** amount of air, the purpose for which they are constructed will be defeated.

Thousands of auto owners have equipped their machines with balloon tires and have been cautioned that the air pressure in these tires **must be correct**. The Air-O-Meter is the only device that will deliver air in **correct** amounts—automatically—without testing. Install one in your filling station, garage or tire shop and you will immediately see that auto owners will "drive miles" to take advantage of this service. They will show their appreciation by patronizing you. The sooner you install one the sooner will you get this additional business.

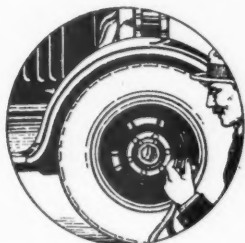
*Air-O-Meters are built in various styles and sizes. Write at once for full information.*

**The Mattman & Sinclair Co., Cincinnati, O.**



### ONE

Merely turn the handle to the exact pressure desired.



### TWO

Apply hose to tire valve stem. Light appears, burns constantly as air is being delivered. Air stops automatically and light goes out when desired pressure is reached.



### THREE

You are off in a minute—knowing that you have the exact amount of air in your tires.



# Air-O-Meter







# STURDINESS DURABILITY CAPACITY

**E**VER since the first Hyatt Roller Bearing was manufactured 33 years ago, inherent sturdiness, durability and capacity have been conspicuous Hyatt qualities. And now these essential bearing qualities are provided to an even greater degree in the Hyatt New Series Roller Bearings.

#### HYATT ROLLER BEARING COMPANY

Newark Detroit Chicago San Francisco

Worcester Milwaukee Huntington, W. Va. Minneapolis Philadelphia  
Cleveland Pittsburgh Buffalo Indianapolis

*The  
New Series*

# HYATT

*Quiet*  
**Roller Bearings**

# Introducing the 1 Newest Member of the American Family~



Cut 140-V

A moderately priced Visible Gasoline Pump fitted with a special Blackmer rotary pump, with container, in which adjustable overflow does the measuring — made to meet the demand for a CHEAPER pump.

Furnished with either five or ten gallon visible container. Like all American Pumps, Cut 140-V is attractive in appearance, of substantial construction, quick and easy to operate, and at the price, is without an equal in the market.

This pump is of special interest to oil companies looking for moderately priced equipment that is dependable, that gives continuous and satisfactory service, and that is very economical in operation.

Write for full information.

**The American Oil  
Pump & Tank Co.**

1159 Findlay Street  
CINCINNATI, OHIO

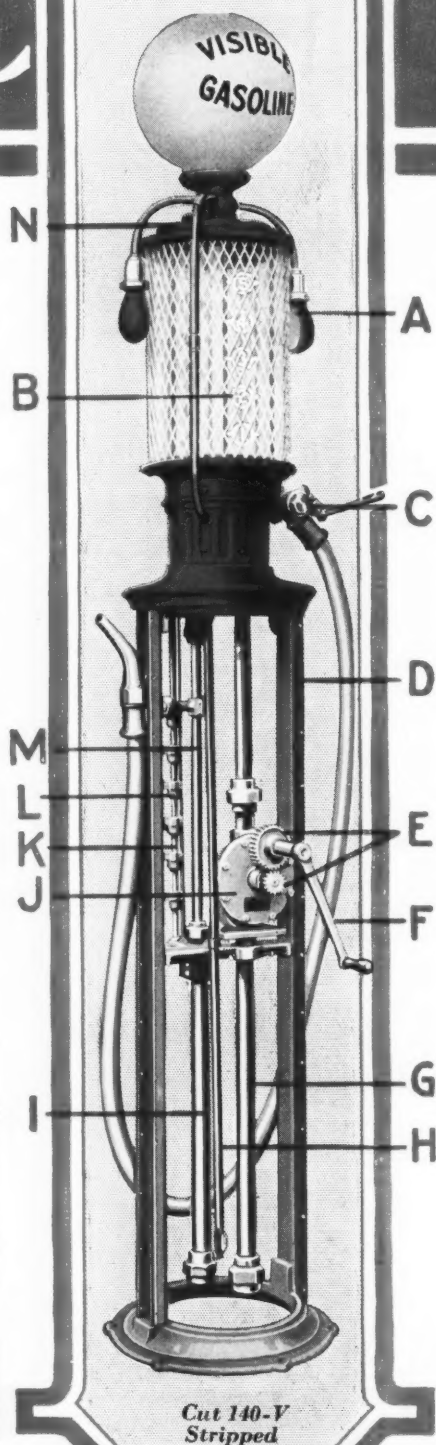


Cut 340-V

## American *Visible* Equipment

See Other Side

# Simple Construction Efficient Operation Popular Price



Look at this pump—same as 140-V on other side except without cabinet, showing the different important parts, as follows:

A—Drop Lights on each side of container—*very unusual* on moderately priced pumps.

B—Aluminum numerals on inside of glass cylinder. This cylinder, the numerals, the metal screen—all are standard American equipment.

C—Special throttle valve with air valve attached.

D—Three-inch heavy channels—very strong and rigid.

E—Gears with cut teeth. Locking device (not shown) meshes with gear teeth so that rotary pump cannot be turned.

F—Handle—can be removed after locking pump by simply turning backward—a measure of protection at night.

G—One and a half-inch suction pipe.

H—Half-inch rigid conduit.

I—One and a quarter-inch return line.

J—Special Blackmer Rotary Pump—recognized by oil companies as one of the best for handling gasoline.

K—Threaded quantity rod.

L—Threaded quantity stops for adjusting overflow to one, two, three, four or five-gallon level.

M—Aluminum adjustable overflow pipe—of  $\frac{3}{4}$ -inch tubing, bright and shiny.

N—Dome—can be removed for cleaning without disturbing electrical fixtures.

And there are still other special features that give added value to this pump.

Write now for very attractive prices and further information.

**The American Oil Pump &  
Tank Company**

1159 FINDLAY ST.

CINCINNATI, OHIO

## American *Visible* Equipment

See Other Side





# Fix 'er up

## The Ultimate Solution Of the Used Car Problem

rests with the car owner. There are in round figures fifteen million used car problems in the United States today. Every car owner has one and it reads something like this—"How am I going to get full service per dollar invested in my automobile?" The answer is: "Take care of it."

In justice to the manufacturer it must be admitted that such an ideal situation is far from being a fact today. In spite of his heroic efforts automobiles are abused, misused and neglected in shameful manner on every hand, and almost invariably the "buck" is passed back to the automotive industry.

In its final analysis the used car problem, and it is a tremendous problem, must be solved by bringing about a state of affairs where the automobile itself is given decent treatment and the industry a square deal. Cars cannot give the full measure of service which is built into them unless they are properly conditioned. The automobile is about as fool-proof as anything on the market, but it is not yet capable of making its own repairs and adjustments automatically.

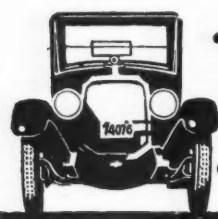
The entire automotive industry will benefit from a united effort to educate the automobile owner to the vital necessity of keeping his car in good condition whether he is going to use it, sell it or trade it. In short, "FIX 'ER UP."

The Packard Electric Co.  
The Eaton Axle & Spring Co.

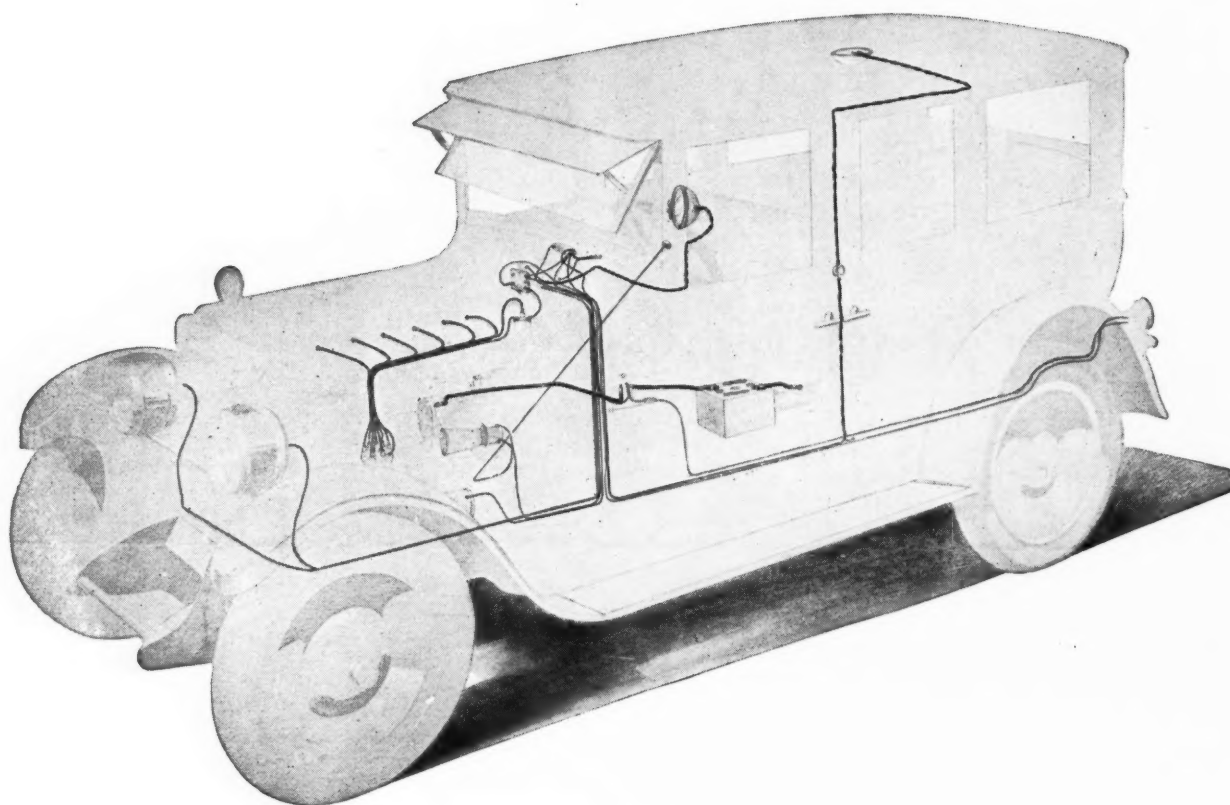
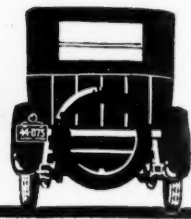
The Cleveland Piston Pin & Bolt Co.  
The Brunner Manufacturing Co.

The Cincinnati Victor Co.  
The Cleveland Twist Drill Co.

## • To use -to sell-to trade •



# Fix 'er up



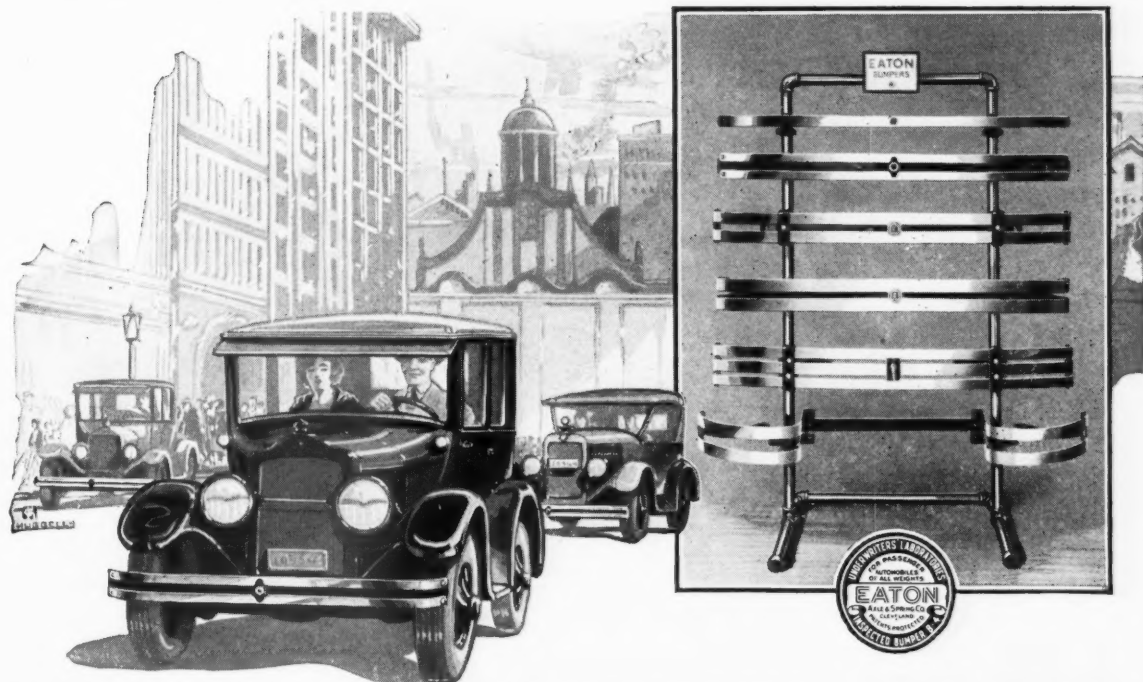
Nothing will create a better impression as to the condition of a used car than to lift up the hood and find it rewired with PACKARD CABLE. Just bear this in mind when you suggest to the owner that he "Fix 'er Up."

*The Packard Electric Company*

WARREN, OHIO

**" To use -to sell- to trade "**

# Fix 'er up



## Nothing Will Improve the Old Car Like New Bumpers

THEY will add not only to its looks but to its *resale value*. And they will *preserve* those looks, and that value, by warding off the bumps that otherwise are so costly.

Eaton Bumpers afford not only great strength and beauty, but designs, weights and prices to suit all varieties of tastes and purses—from the incomparable "Excalibur" at \$40 to the light Single-Rail at \$11.

The new Eaton "Gard-All" (Light-Weight Model) offers a wonderful value to owners of Fords, Chevrolets, Overlands, Stars, etc.

*Ask Your Jobber*

THE EATON AXLE & SPRING COMPANY  
CLEVELAND

NEW YORK  
616 W. 56th St.

BOSTON  
162 Brookline Ave.

PHILADELPHIA  
223 N. 22nd St.

CHICAGO  
2933 Calumet Ave.

ALBANY  
No. Pearl and VanWoert

CLEVELAND  
6515 Carnegie Ave.

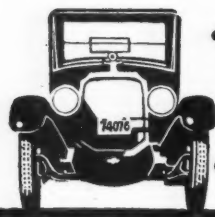
# EATON

## BUMPERS

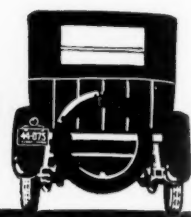


# "To use -to sell-to trade"





# Fix 'er up



*"Fix 'er up"  
is the best  
solution  
of the  
Used-Car  
Problem*

—and be sure to use  
**These BETTER Bolts, Pins  
and Steel Bushings**  
**Each Car-BUILDER's Specifications**

are followed in the manufacture of CLEVELAND Piston Pins, Spring-Shackle, Tie-Rod, Steering-Spindle Bolts and Steel Bushings. Each is positively a DUPLICATE of the item it replaces.  
By using CLEVELAND Pins and Bolts you are able to get your entire requirements FROM THE ONE SOURCE. ONE order to make out. ONE shipment to receive and enter in your stock. ONE invoice to put through your bookkeeping department.

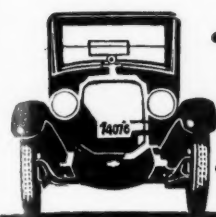
**85 Jobbers Stock Them**

No matter where you are located, there is a jobber stock of CLEVELAND Pins and Bolts near enough to you SO THAT YOU CAN HAVE TWENTY-FOUR HOUR SERVICE.  
Drop us a postal for our Stock-List, and the name of jobber nearest you.

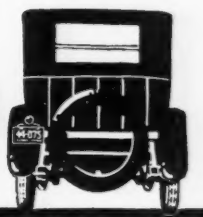
**PINS BOLTS  
Cleveland**

**Cleveland Piston Pin & Bolt Co., Cleveland, Ohio**

**“ To use -to sell-to trade ”**



# Fix 'er up



**N**O car looks its best nor is at its best when its various mechanical parts are coated with grease and dirt nor when its once beautiful finish is scratched and marred.

Here lies a real opportunity. Why not offer a cleaning and painting

service and get these added profits which lie at your very doors?

The maintenance of such a service will necessitate no large outlay for equipment. With a Brunner Air Compressor, properly chosen for your needs and properly connected to your shop, you can

## do it with compressed air!



The Brunner Air Compressor is known the world over as a quality equipment capable of giving trouble-free performance through years of hard service.

Ask for the Brunner Book "Air Profits" which describes many profit making uses of compressed air and catalogues the Brunner Line of Compressors and attachments.

**BRUNNER MANUFACTURING CO.,**

**Utica, New York**

*Oldest and largest manufacturers of Garage Air Compressors in the World.*

**AIR CLEANING** Every day you will find new uses for your air blast. Chief among the uses that have been proved out are:

Blowing carbon after scraping (illustrated). Clearing fuel and oil lines. Testing radiators, tanks and hollow shafts. Cleaning generators, distributors, etc. Drying wire wheels and chassis parts. Cleaning stock bins, tool racks and display cases. Cleaning upholstery. Drying gasoline tanks before soldering. Drying assembled bearings after kerosene or acid bath.

For air cleaning a pressure of 40 to 60 lbs. is adequate. The nozzle orifice should not be greater than 1/32 in. This had been proved by repeated experiment under all conditions on all kinds of air blast work.



**AIR SPRAYING.** The air spray can be utilized on many jobs—you will discover new uses each day which can be a source of saving or profit.

Cleaning dust, bugs, twigs, and road oil from radiator. Requires ten minutes and 1 gallon of gasoline. Usual flat rate of one dollar is charged for this operation.

Cleaning complete motor. Requires twenty-five minutes and two gallons of gasoline for large six cylinder motor. The usual flat rate charge is \$1.25 for small motors and \$1.50 to \$2.00 for large motors.

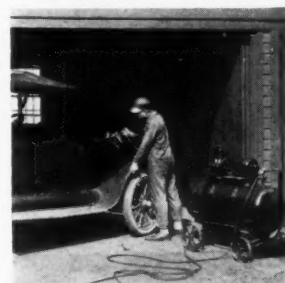
**BRUNNER  
MODEL 939**



A two-stager



A Brunner starts quickly, works fast, runs smoothly without vibration, costs little to maintain, is super-safe and gives years of trouble-free service.



**PAINT SPRAYING**—Second hand cars can be brightened, wheels painted, radiators recoated and tires enamelled all to good advantage with a paint gun connected to your Brunner Air Line.

Where painting is done intermittently a 1/2 H.P. or 3/4 H.P. compressor will serve for one paint gun. Where steady painting, cleaning and spraying is practiced, Brunner Models 949, 969 or 965 are most suited.

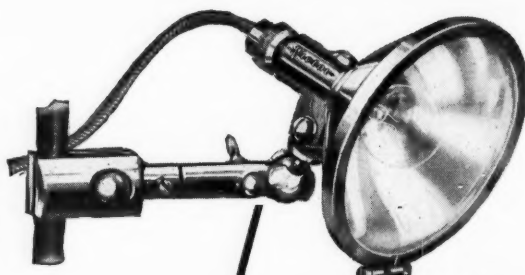
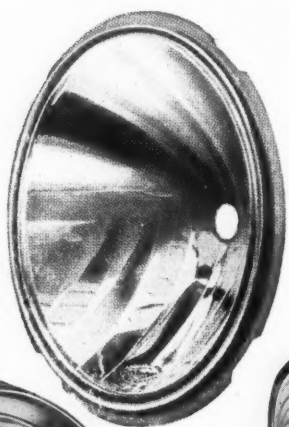
If additional air tools are in use, Model 247 is advised.

## " To use -to sell-to trade "

# Fix 'er up

## The Victor Projector

A specially formed, silver plated shell that replaces the reflector and eliminates the need for special lenses. It projects the full light of the headlamps hundreds of yards ahead but not above the level of the lamps. Legal for use in all states.



## Victor Spot Lamp

One of the most popular selling lamps in the Victor Line. Every car owner wants one of these attractive, powerful and efficient spot lamps. Made in several styles for open or closed models.

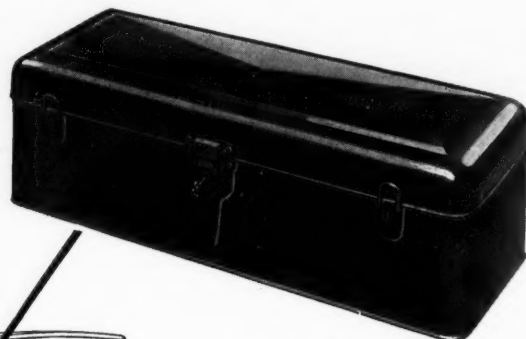


## Victor Drum Type Headlamps

All the enhancing beauty of the lamp maker's craftsmanship. Of the popular design—well made and beautifully finished. A special "U" Bracket adapts it to all cars.

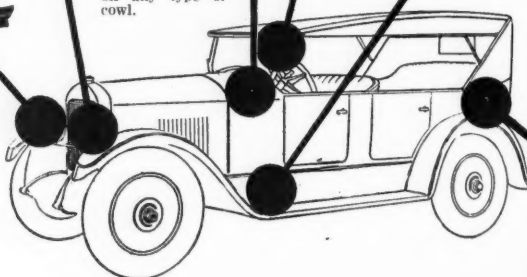
## Drum Type Side Lamps

Minutaires of the Drum Type Headlamps. Equipped with a ball and socket bracket that permits easy and rigid installation on any type of cowl.



## Victor Tool Box

A strong, sturdy tool safe that fits the running board. Made of 22 gauge steel finished in hard baked black enamel and equipped with a Yale lock. Made in several sizes.



## The Warning Hand

A new Victor Lamp with a double filament bulb. It flashes a red warning hand to signal stops. It throws a soft white light forward for courtesy and parking.

## How Victor Helps

Lamps are a focal point of attention on a motor car.

If they are bright, of pleasing design and properly installed they add to the appearance of any car more than can any other one thing.

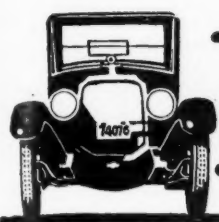
With all this they must be efficient, sturdy and built to last for the life of the car.

Victor Lamps are of the finest quality that our experienced craftsmen can produce. They are backed by an eighty-year reputation. Write for catalog.

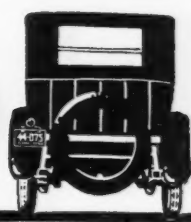
THE CINCINNATI VICTOR CO.  
714 Reading Road, Cincinnati, Ohio

# " To use -to sell-to trade "





# Fix 'er up



## Overhaul the Springs

WHEN selling your customers on having their cars reconditioned, be sure to mention the importance of putting the *springs* in shape. This may mean simply cleaning and graphiting, with a few new bolts or clips, or it may mean a complete new spring in some cases.

Whatever it is, it will improve the riding qualities of the car, and possibly prevent a serious breakage later.

This new catalog of Perfection Springs for replacement is your complete guide-book for good springs made to each car manufacturer's specifications.

*Handled by Good Jobbers Everywhere*

THE EATON AXLE & SPRING COMPANY  
CLEVELAND

NEW YORK  
616 W. 56th St.

BOSTON  
162 Brookline Ave.

PHILADELPHIA  
223 N. 22nd St.

CHICAGO  
2933 Calumet Ave.

CLEVELAND  
6515 Carnegie Ave.



# PERFECTION



## SPRINGS



AN EATON PRODUCT

### "To use -to sell-to trade"

# For a Broken Grease Cup—Use **EZY-OUT**

TRADE MARK REG.  
U.S. PAT. OFF.

About 83% of the live garage and repair shop men know what the EZY-OUT SCREW EXTRACTOR means to **them** when it comes to getting broken screws out of deep holes, BUT—

Did you ever stop to think that you can sell an EZY-OUT Set to at least 50% of the car owners in your town?

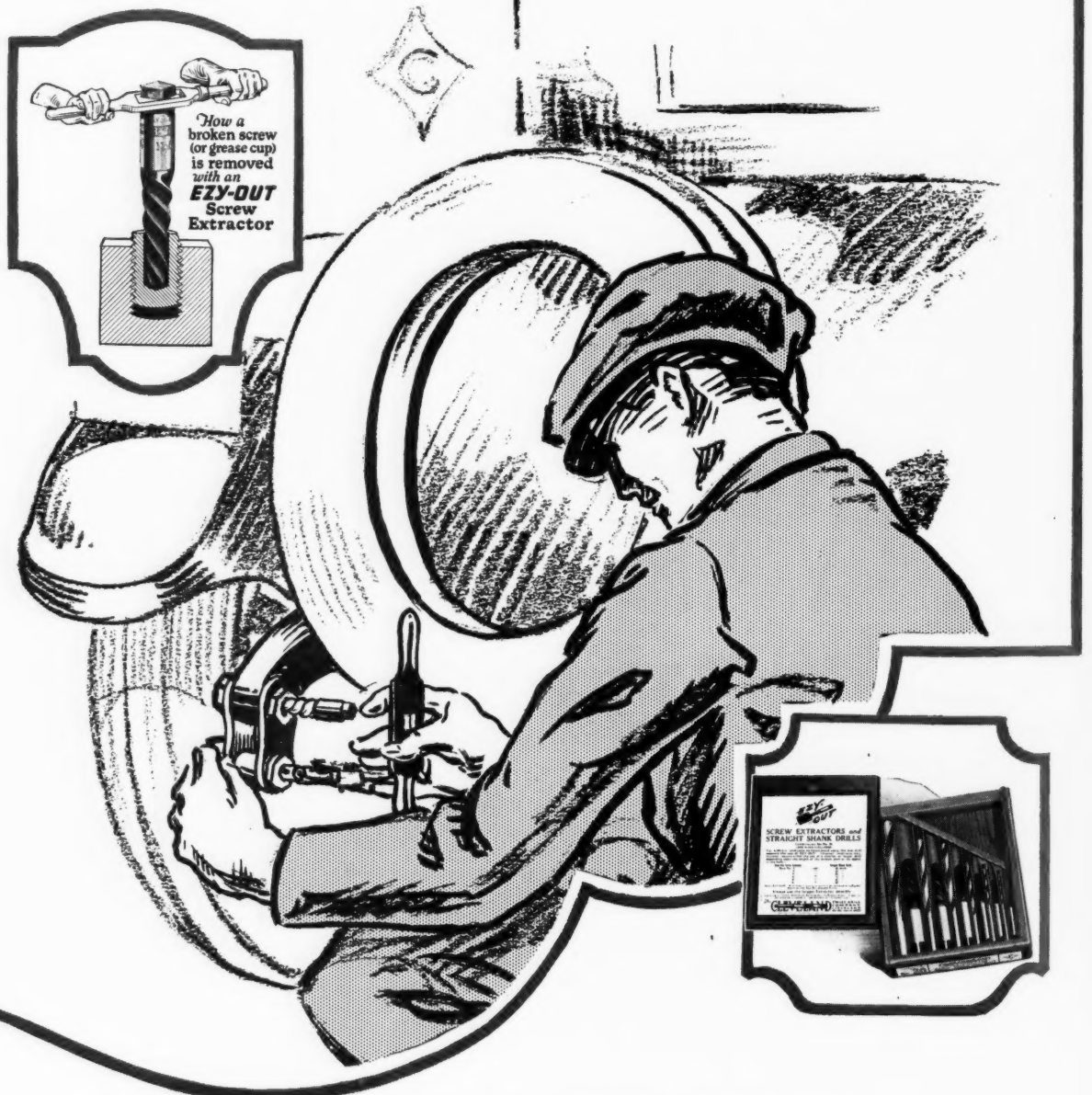
Well, it can be done, as investigation has shown. Why not go after your share of the business?

Take, for instance, the job of getting out a broken grease cup. No man wants to waste the time to take his car down to the garage just to get that little job done. Even if you can't sell him the \$5.00 No. 20 Set, he's a prospect right off the bat for the No. 15 Set, at \$3.00. And with that Set he can remove broken screws from practically any part of his car. Besides, EZY-OUT has a dozen and one

other uses, such as taking broken screws out of Radio parts, loosening rusted washers in water faucet connections, etc., etc.

Stock a few EZY-OUT Sets and see how surprisingly fast they move. Give them a good display, talk them up to your trade. Remember, too, that in many cases you can also sell a few drills along with the EZY-OUTS.

Ask your dealer to help you select a proper stock of EZY-OUT Sets. He'll be glad to help, but if by any chance he does not carry EZY-OUT SCREW EXTRACTORS, send us his name and we'll do the rest. **RIGHT NOW** is the time to go after the EZY-OUT business!



The **CLEVELAND** **TWIST DRILL COMPANY**  
CLEVELAND  
NEW YORK-CHICAGO-LONDON

TRADE MARK REG. U S PAT OFF AND FOREIGN COUNTRIES



QUALITY  
**BOCK**

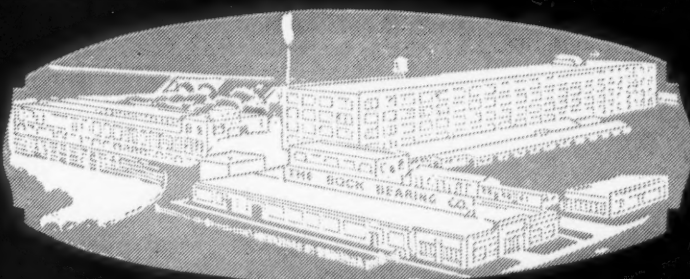
QUALITY TAPER ROLLER  
BEARINGS

*carry  
radial  
& thrust  
loads*

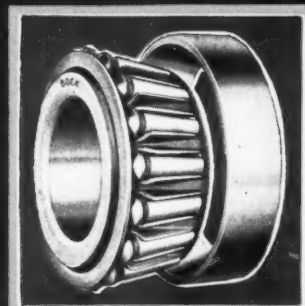
*They give*

**DOUBLE  
SERVICE**





## *Bearings that Give Double Service*



In more than one sense Bock Taper Roller Bearings give double service.

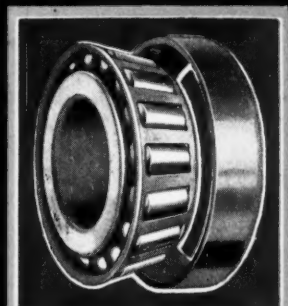
They carry both radial and thrust loads --- that is one way. And many car manufacturers and service men have found that they actually give double the length of service secured from

other bearings.

The Bock "R" type has an extraordinary record of performance. The new "D" type is made of the same alloy steel throughout, with all the care and precision which have established Bock as the "quality" bearing. It is giving the same double service in applications for which the "R" type is not available.

For original equipment or for service needs, in wheels, differentials, pinions, worms, transmissions and steering pivots, Bock Bearings will more than satisfy you. We have service facilities everywhere.

THE BOCK BEARING COMPANY    Toledo, Ohio



# BOCK

QUALITY TAPER ROLLER  
BEARINGS

## A Packing That Has Grown With The Automotive Industry



### Compressed Asbestos Sheet Packing

Can you remember when you first heard of Tenax? When the early models of automobiles were arousing curiosity as playthings of the well-to-do, Tenax had already matured in service to power plants.

It was quickly approved for automotive use and as quickly became the favorite of men who appreciated quality packing. That early preference of Tenax has remained, because as the years passed no variation in the quality, texture, pliability or easy working features was permitted.

The Tenax of to-day is the Tenax of twenty odd years ago. "The Original Blue Sheet."

If you are not using Tenax, buy it. Buy it for quality that has held it in leadership of all asbestos sheets.

Thickness 1/8, 1/16, 1/32, size 50x50 inches, in blue, red or black. 1/64 inch in black graphited only.

Put Tenax on your "want list" now. If your jobbers do not supply it write direct for small sample and prices.

### Advance Packing & Supply Co.

808 Washington Blvd.

Chicago

Pacific Coast Distributor: Allied Industries Inc., San Francisco, Los Angeles, Seattle

67-7-3970



The Rollin is the Only Car in the World having all of the following engineering refinements—each one, years in advance of current practice:

Balloon Tires  
4-Wheel Brakes  
European Type Motor  
Transverse Rear Spring  
Four Bearing Crankshaft  
25 to 30 miles per gallon of gas  
New Manifold Development

No wonder the Rollin is an attractive car to own, drive and sell.

Dealers write for attractive proposition.

Touring Car	-	-	-	-	-	-	\$ 995
Three Seated Coupe Roadster	-	-	-	-	-	-	1195
Five Passenger Sedan	-	-	-	-	-	-	1295

*Prices f.o.b. Cleveland. Tax extra.*

THE ROLLIN MOTORS COMPANY  
CLEVELAND, OHIO

ROLLIN







***"Sure—Your job's going to be ready on***

time. Since the boss began using Watkins Rebabbiting Service we've had no trouble in sticking to our delivery promises. You see we can get one day service on connecting rods now, and we don't waste a lot of time scraping because Watkins Rebabbitted Rods fit quick to the crankshaft. That saves our time, and saves you money. You get a better job, too, because Watkins Rebabbitted Rods are completely rebuilt. You're going to have a mighty sweet running motor when we get through with this job."

## WATKINS ROD SERVICE

**Helps You Keep Delivery Promises**



**WATKINS**  
*Complete* **REBABBITING**  
**SERVICE**

Watkins Rebabbiting Service consists of complete rod rebuilding—new bearings tinned in and broached to mirror finish. New bolts, nuts and Laminated Shims are supplied and bronze piston pin bushings if used.

Watkins special equipment, jigs, and methods of finishing, greatly reduce your installation time on rebuilt rods. Laborious, time killing scraping is not required.

Each Watkins Plant is completely equipped to give you specialized service. Ship your old rods into branch nearest you for rebuilding now and always be ready for the rush jobs. One Day Service helps you in emergencies.

HARTFORD, CONN., Ripley Motor Services.  
INDIANAPOLIS, IND., Indiana Watkins Mfg. Co.  
KINGSTON, ONT., Watkins Mfg. Co., of Canada, Ltd.  
LOS ANGELES, CALIF., Wright Mfg. Co.  
MEMPHIS, TENN., J. B. Cook Auto Co.  
NEW YORK, N. Y., Lake Sales Co.  
OMAHA, NEBR., Interstate Machinery & Supply Co.

PORTLAND, ORE., Factory Motor Car Co.  
SEATTLE, WASH., Solon Grinding Company.  
ST. LOUIS, MO., H. & H. Machine Co.  
SYRACUSE, N. Y., Watkins Mfg. Co. of New York.  
TOLEDO, OHIO, Stewart-Burgan Co.  
WASHINGTON, D. C., R-L Motive Parts, Inc.  
WATERLOO, IA., All States Rebabbiting Service.

**The Watkins Mfg. Co.,**

**Home Office**

**Wichita, Kans.**

# "Nothing Short of the Best Will Do in Rewinding"—

## *Read Guarantee on Job*

Workmanship and quality of materials are what count in armature rewinding. We have an organization that has grown up with the industry—and our plant has all the facilities of an enterprise making new armatures. All materials used are according to original specifications.

Each rewind armature is as carefully made as a brand new one.

You can send us your armatures with the utmost confidence.



### PRICES

Ford Armature Rewound .....	\$2.00
Any two unit Generator Armature Rewound .....	\$5.00

## Prompt Service

We ship the same day received. A stock of 8000 rewinds—each with our Yellow Band Guarantee attached—enables us to give "Same Day" service.

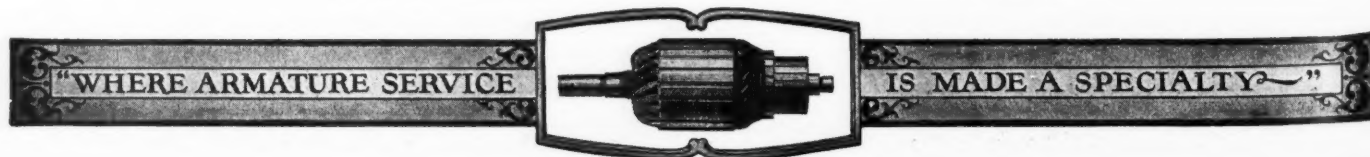
However, we will rewind and return identical armature if desired.

## U. S. AUTO SUPPLY CO.

*Armature Rewinding Division*

3845 S. Wabash Ave.

Chicago

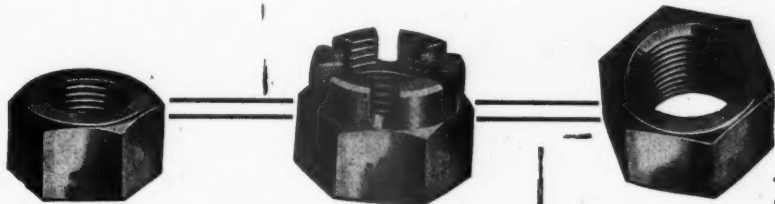




## UTILITY NUTS S. A. E. & U. S. S.

*Made to the specifications of car makers*

When you want quick delivery of quality nuts, either castellated or plain, come here where we are experienced in handling the most rigid requirements at the right price. Shipped 100 in a package.



This counter display board is increasing the sale of nuts for many dealers. You will also find that it prevents an accumulation of broken packages. Holds 347 assorted nuts from  $\frac{1}{4}$ " to  $\frac{1}{2}$ ". S.A.E. Plain and Castellated and U.S.S. Plain. Retail value—\$11.61.



List  
\$1.75

## UTILITY UNIVERSAL RIM WRENCH

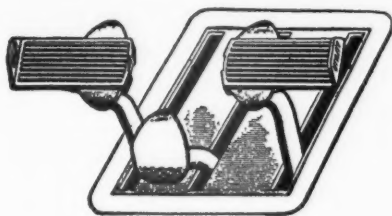
*Absolutely automatic, it grips the nut like the fingers of your hand*

This wrench will fit any rim nut, holding it firmly until it is removed. That is why your own mechanics will like it so well—saves time on every job. Dealers find it outsells other rim wrenches and, because it will enable you to eliminate from your stock other tools for this purpose, you will find it a great profit maker.

## UTILITY Safety Extension Pedal

*for Fords*

Any Ford owner will appreciate the added comfort and safety these Extensions will give, and we can imagine few who would even hesitate to pay the price of 75 cents.



## UTILITY Bearing Metal

50% longer life than genuine babbitt metal. The result of years of research by well known metallurgists. Easy to pour and can be heated to cherry red without damaging. Can be reclaimed over and over again.

ONCE TRIED ALWAYS USED

*Write for Price*

Because every UTILITY product is correctly priced, their sale has become one of the most important profit producers for both Dealers and Jobbers, the rapid turnover possible with them causing more Jobbers to handle them this year than ever before.

If your Jobber cannot supply you write us direct for full information.

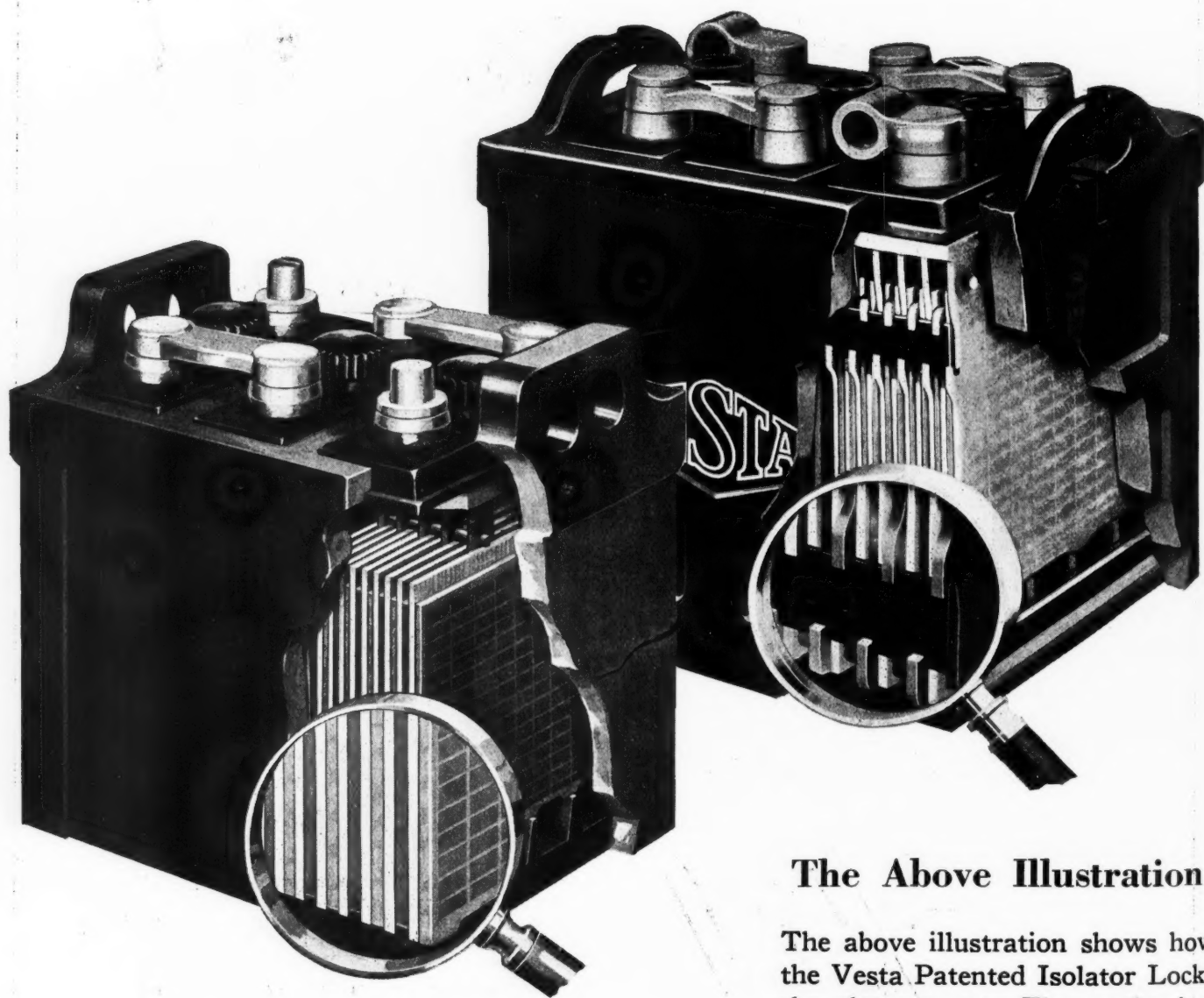
# THE HILL PUMP AND VALVE CO.

4601-27 BELMONT AVE.

CHICAGO, ILLINOIS



# There is



## In This Picture

In this picture, the ordinary principle used in ALL OTHER MAKES of batteries is shown. The separators are depended upon entirely for the spacing of the plates. The possibilities of short circuit due to wear of these separators at the corner are immeasurably increased.

## The Above Illustration

The above illustration shows how the Vesta Patented Isolator Locks the plates apart. The mechanical duty of separating the plates is thus accomplished, relieving the wood separator of this strain. The Isolator is made of high grade hard rubber and is impervious to acid.

# only one!

There is only one battery that has the protecting Isolators. It is the

## Vesta Isolator Battery

### "Vesta Centrals"

ALBANY MOTOR SPECIALTY CORP.,  
109 Lexington Ave., Albany, N. Y.  
SOUTHERN MOTOR EQUIPMENT CO.,  
216 Spring St., Atlanta, Ga.  
BOICE MOTOR EQUIPMENT CO., 562  
Commonwealth Ave., Boston, Mass.  
VESTA BATTERY SALES CO., 21st St.  
at Chester, Cleveland, Ohio.  
TENNANT BROS., Dallas, Texas.  
EQUIPMENT SERVICE CO., 13th at  
Lincoln, Denver, Colo.  
AUTO ELECTRIC & SERVICE CORP.,  
91 Selden Ave., Detroit, Mich.  
THE FAETH CO., 1117 W. 8th St.,  
Kansas City, Mo.  
McCLELLAND-FELTHOUSE CO., 1358  
Figueras St., Los Angeles, Calif.  
REINHARD BROS. CO., 11 S. 9th St.,  
Minneapolis, Minn.  
WALTHER BATTERY SERVICE CO.,  
867 St. Charles St., New Orleans, La.  
P. J. DURHAM & CO., 244 W. 49th St.,  
New York, N. Y.  
OMAHA BATTERY COMPANY, 2212  
Harney St., Omaha, Nebr.  
J. H. McCULLOUGH & SON, 257 N.  
Broad St., Philadelphia, Pa.  
AXWELL EQUIPMENT CO., 240 2nd  
Ave., Pittsburgh, Pa.  
SALT LAKE HARDWARE CO., Salt  
Lake City, Utah.  
EQUIPMENT SERVICE CO., 2631 Locust  
St., St. Louis, Mo.  
WATERHOUSE & LESTER CO., 540  
Howard St., San Francisco, Calif.  
SPOKANE BATTERY & IGNITION CO.,  
1201-3 W. Sprague Ave., Spokane, Wash.

This feature (patented and exclusive) locks the plates apart.

The illustrations opposite show the difference in construction between the Vesta Isolator Battery and **ALL OTHER MAKES**. When you realize that the plates of a battery must be kept apart to avoid short circuits and also must be evenly spaced, the great value of this locking device placed **AT THE FOUR** corners of the plates is apparent.

The Isolator is not a new or untried experiment. It has been an outstanding and appreciated mark of merit in Vesta Batteries for the past eight years. The institution behind it has the benefit and experience of twenty-seven years in the battery business. It is responsible for the year after year increase in sales.

You, Mr. Dealer, would like to have the **ONLY** cord tire. The Vesta Isolator Battery compares with the ordinary construction as cord tires compare with fabrics. It is not surprising that increasing numbers of motorists are demanding Vesta when replacing, instead of the make which was standard equipment.

Thousands of dealers are profiting by this demand. You should be one.

*No Other Battery  
Has Them*

VESTA BATTERY CORPORATION  
CHICAGO, ILLINOIS

**VESTA**  
COSTS LESS PER MONTH OF SERVICE



*Indestructible  
Isolators Lock the  
Plates Apart*

# SPRINGS

Tuthill TITANIC Hump Center Springs are guaranteed *forever* against center breakage, the point at which most breaks in ordinary springs occur.

TITANIC Springs can be installed just as easily as ordinary bolt springs and they fit the cars for which they are intended because they are built exactly to the car makers' measurements.

The superiority of alloy over carbon steel is now well recognized and the tendency of car makers is to use part or all alloy in their springs. Alloy steel *exclusively* is used in building TITANIC Springs.

Everything in the TITANIC proposition tends toward that which is *better*. TITANIC Springs always make satisfied customers. They always lead to more profit.

The manufacturers of TITANIC Springs have had forty-four years' experience in building springs of highest quality. Their reputation for supplying only dependable merchandise is established the world over.



**TUTHILL SPRING CO.**

**760 Polk St.**

**CHICAGO, ILL.**



# When a Man Talks Like This

—it is proof that what a Drill does means more to him than the mere price he paid for it. See if you don't think so.



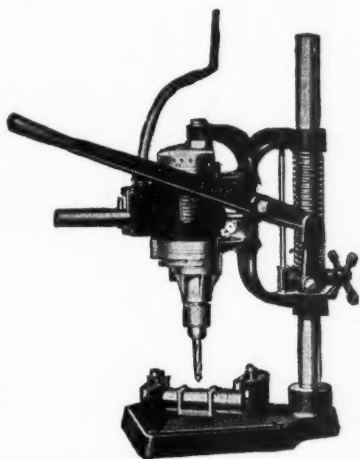
The New  
**TEMCO**

Model  
G-D

Half-Inch Garage Drill  
Price \$56.00

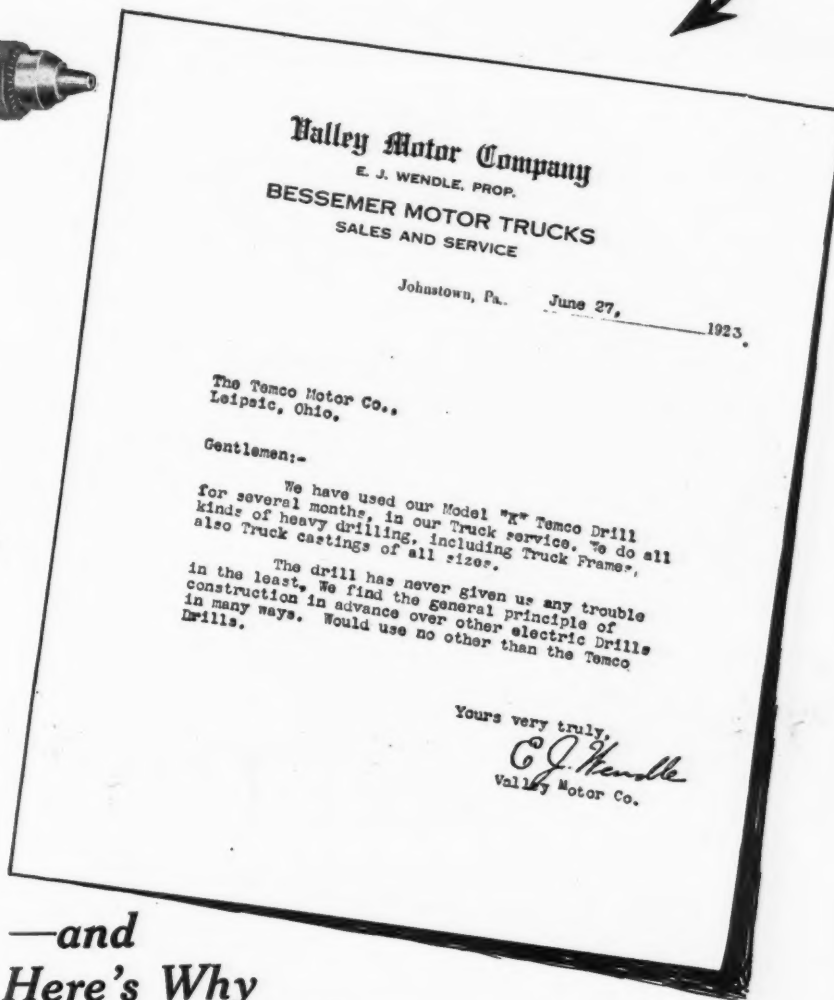
Length, 17 in.; Weight, 16 lbs.; Speed, 650 R.P.M., any voltage to 250 volts.

Just the tool for all kinds of garage repair work, such as lapping pistons, honing cylinders, grinding valves, installing accessories, or doing the hundred-and-one odd jobs of drilling, reaming, tapping, etc. Can also be used in the Temco Bench and Post Drilling Stand shown below.



Combination Bench and Post  
Drilling Stand

Takes Models "GD," "J," "K," "N," and "T" Temco Drills without need of extra attachments. Extra brackets furnished for attaching to vertical column or side wall. Sturdily built to withstand hard service. Price, only \$26.00.



## —and Here's Why

Drills should be bought for Power and Performance. You wouldn't expect a half-ton truck to carry a five ton load. Then why get a light-duty Drill for heavy-duty drilling?

You, too, can have TEMCO Results merely by asking your Jobber to send you a Temco on trial. Or, if your Jobber can't supply you, write us, giving your Jobber's name.

TEMCO Construction is your best guarantee of Drill Performance. No other Drill of the same rated capacity can equal the service Temco users are getting from Temco Heavy Duty Drills.

**The Temco Electric Motor Co., 705 Sugar St., Leipsic, Ohio**

Southern Sales Rep.  
Hirsig-Hart Co., Nashville, Tenn.

So. Western Sales Rep.  
H. M. Cree, 5507 Miller Ave.,  
Dallas, Tex.

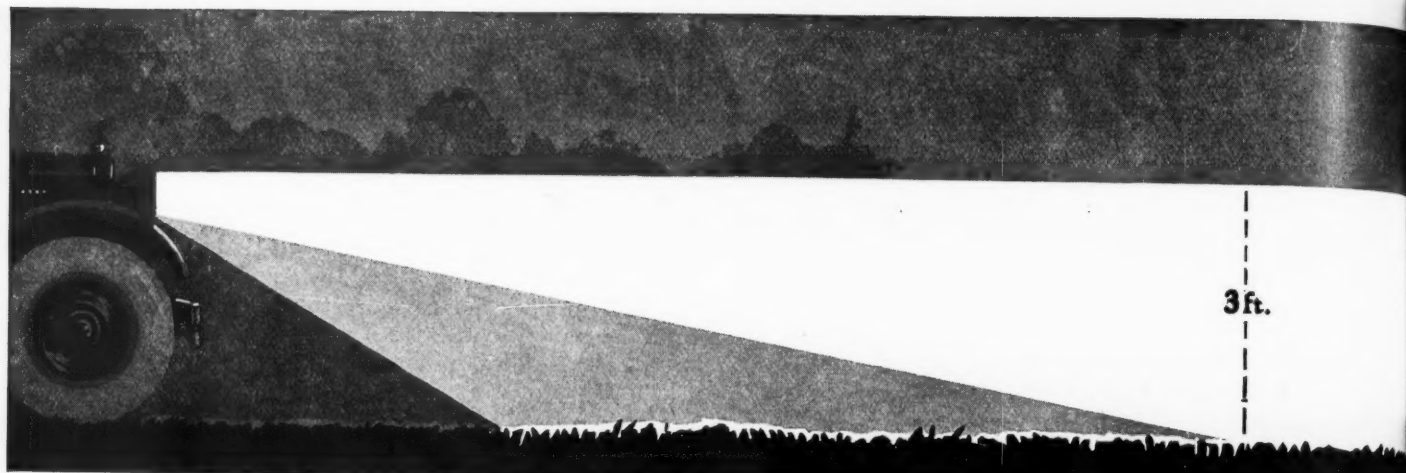
455 Second St.,  
San Francisco, Calif.  
1256 Factory Pl.,  
Los Angeles, Calif.

Western Sales Rep.  
Ailed Industries, Inc.

1252 First Ave. S.,  
Seattle, Wash.  
53 Fourth St.,  
Portland, Oregon.

**TEMCO** **Portable Electric Tools**  
TRADE MARK **Drills-Grinders-Drilling Stands**

Been  
Making  
Them  
Since  
1910

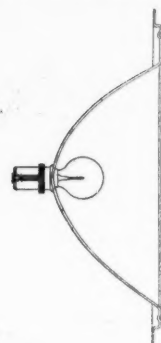


## WHAT IT DOES

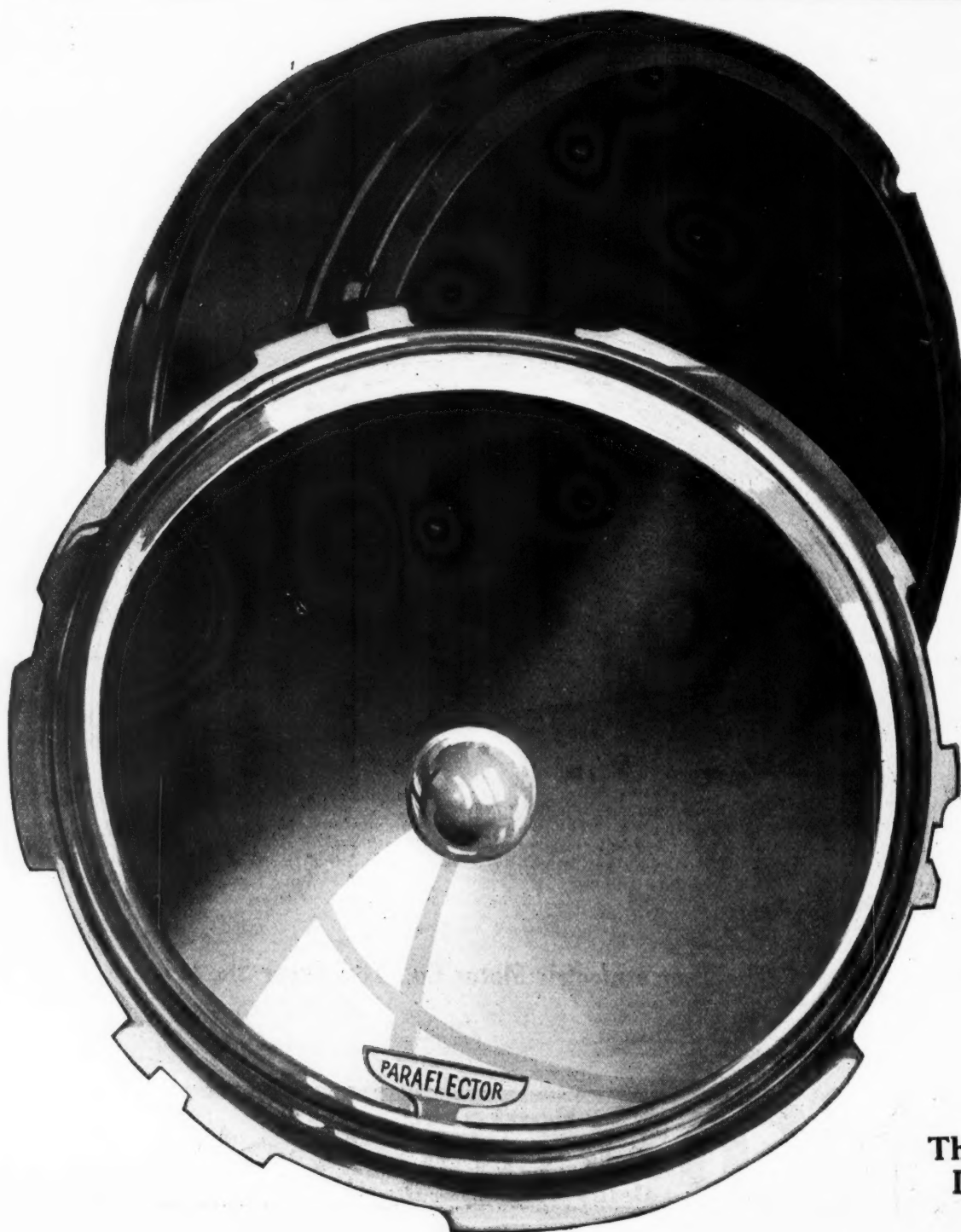
The Paralector has a smooth unbroken surface so curved that all light rays are reflected downwards. No light is scattered in upward beams. The cut-off with Paralector is straight, level and sharply defined. It does not fade away too gradually, putting light where not needed. It cannot send dangerous blinding shafts of glare above a level of three feet.

Paralector puts all the light where it is needed, far down the roadway—from ditch to ditch. The rays are not absorbed by passing through thick molded glass; they are projected through clear window glass—hence the tremendous increase in power and penetration of the light beam. Its "Slices of Daylight" on the road give the driver a sense of perfect security at any speed, even on rainy or misty nights.

**Use Plain Glass  
No Lenses Required**



**The Upper Curve  
Is the Shortest**



3 ft

PARAFLECTOR

# The Final Step In Road Lighting

**L**OOK no further! Here's the reflector that dealers and distributors have been looking for, that meets the needs of motorists—that conforms with various local and state requirements.

Headlight inspection is rapidly becoming compulsory. State after State is falling into line. California—with its strict headlight laws—is now receiving PARAFLECTORS BY CAR LOAD LOTS!

Service Stations, Car Dealers, etc., will welcome the tremendous replacement opportunity offered by this timely necessity. 30 million headlights is your potential market.

Many thousands of drivers in your territory appreciate the need **now**. Our Flash Display sells Paraflectors on sight!

**TWO YEARS OF DEVELOPMENT**—with exhaustive road tests—preceded this announcement to the trade.

*Exclusive territories are going fast. Get in NOW!  
Mail us the coupon for details.*

**THE PARAFLECTOR COMPANY**  
1115 Security Building Minneapolis, Minn.



**FLASH  
DISPLAY**

**Tear Off—**

Mail this coupon *Now*, before you turn the page

The Paraflector Company,  
1115 Security Bldg.,  
Minneapolis, Minn.

Let us have details about the valuable  
PARAFLECTOR Franchise.—AND:

☐ Send me your DISTRIBUTOR proposition.

☐ Send me your DEALER proposition.

Name.....

Address.....

City.....



# AUTOMOTIVE MAINTENANCE EQUIPMENT SHOW

GENERAL MOTORS BUILDING, DETROIT, MICH.  
MAY 19 to 23, 1924.

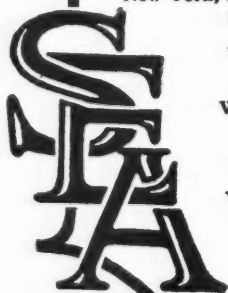
## Automotive Men Will Find This Show a Liberal Education

Come and see the most up-  
to-date service equipment  
in use.

### MEMBERS

#### Service Equipment Associates

Albertson & Co., Inc.  
Sioux City, Iowa  
T. R. Almond Mfg. Co.  
Ashburnham, Mass.  
Bastian-Blessing Company (Rego)  
Chicago, Ill.  
The Black & Decker Mfg. Co.  
Towson, Md.  
Bonney Forge & Tool Works  
Allentown, Pa.  
Brunner Mfg. Co.  
Utica, N. Y.  
Burton-Rogers Company  
Boston, Mass.  
Continental Sales Corp.  
Columbus, Ind.  
Kellogg Mfg. Co.  
Rochester, N. Y.  
The Manley Manufacturing Co.  
York, Pa.  
Wood-Imes Manufacturing Co.  
Minneapolis, Minn.  
Frank Mossberg Company  
Attleboro, Mass.  
Oxweld Acetylene Company  
New York, N. Y., and Chicago, Ill.  
Stevens & Company  
New York, N. Y.  
Van Norman Machine  
Tool Co.  
Springfield, Mass.  
Weaver Manufacturing  
Company  
Springfield, Ill.  
Weidenhoff Products  
Chicago, Ill.  
Wright Manufacturing  
Co.  
Lisbon, Ohio



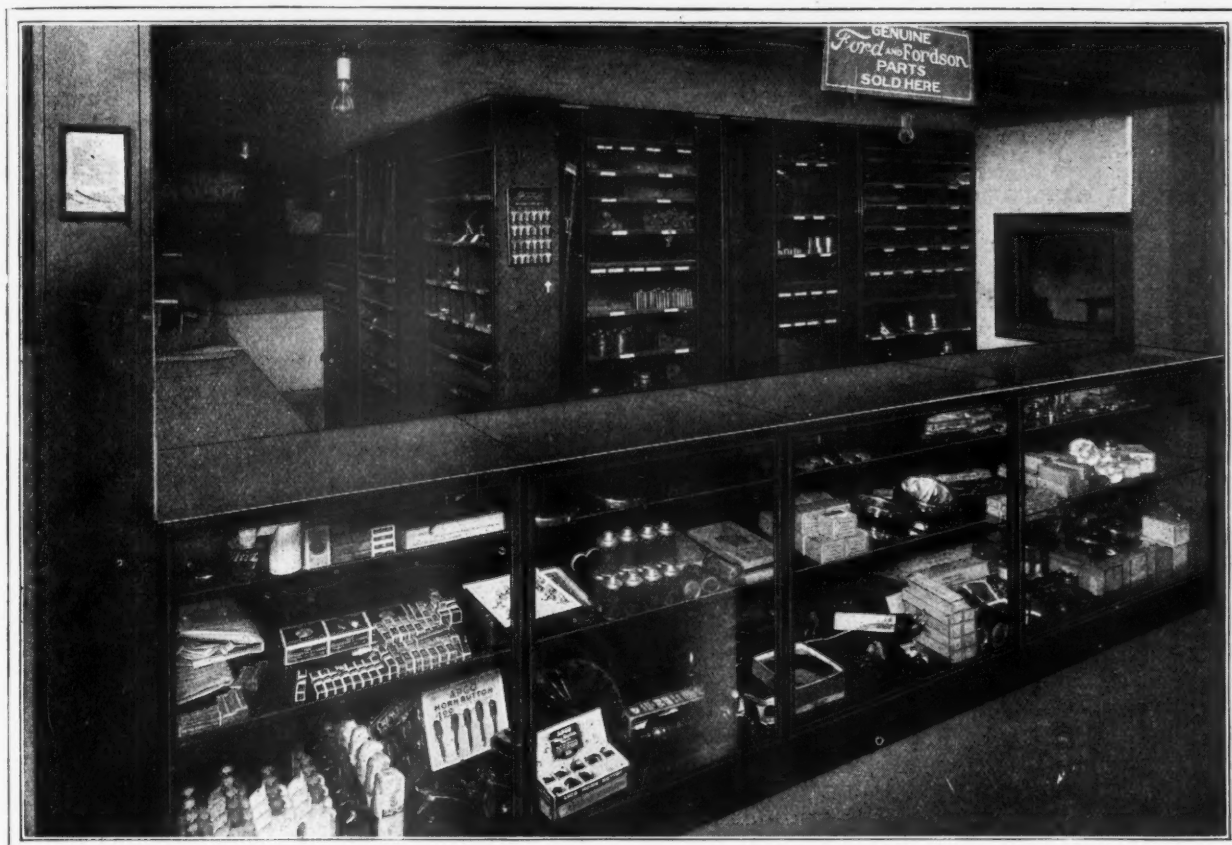
**The Best-Equipped Shop  
Gets the Business"**

### Look for "LARRY"

The exhibits of the SERVICE EQUIPMENT ASSOCIATES will be readily identified by signs bearing the smiling countenance of "Larry" shown above.

**SERVICE EQUIPMENT ASSOCIATES**

# LYON AUTO PARTS CONTROL



## No Sag—No Sway in Lyon Steel Counters

Underneath the trim linoleum top is a sturdy sheet of furniture steel. This is rigidly joined to a heavy steel, closed base by hard angle uprights. Nowhere is there a span of over three feet. At the corners thick plate gussets prevent end and side sway. No weight rests on the front and ends which may be either of steel or glass, as you please, and is removable in two minutes time with a screwdriver.

On the clerk's side, sliding steel doors, which have positive action under any condition, are included when desired.

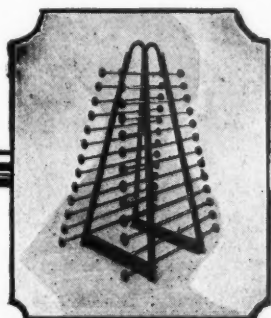
Remember Lyon Steel Counters are assembled by sections before being shipped to you in individual crates. For immediate use you need only bolt the sections together.

As illustrated above, a Lyon Steel Counter makes an ideal running mate for the Lyon Auto Parts Control System. With these two conveniences you can know at all times how your stock is balanced—give customers better service and create more sales through better display.

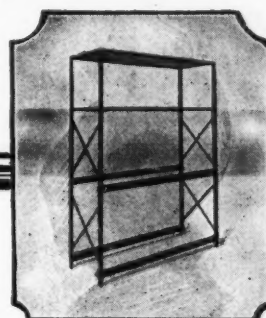
## Lyon Metallic Manufacturing Company

Aurora / Illinois

Lyon Auto Parts Control Systems are sold by  
leading Automotive Jobbers



for Every Storage Need



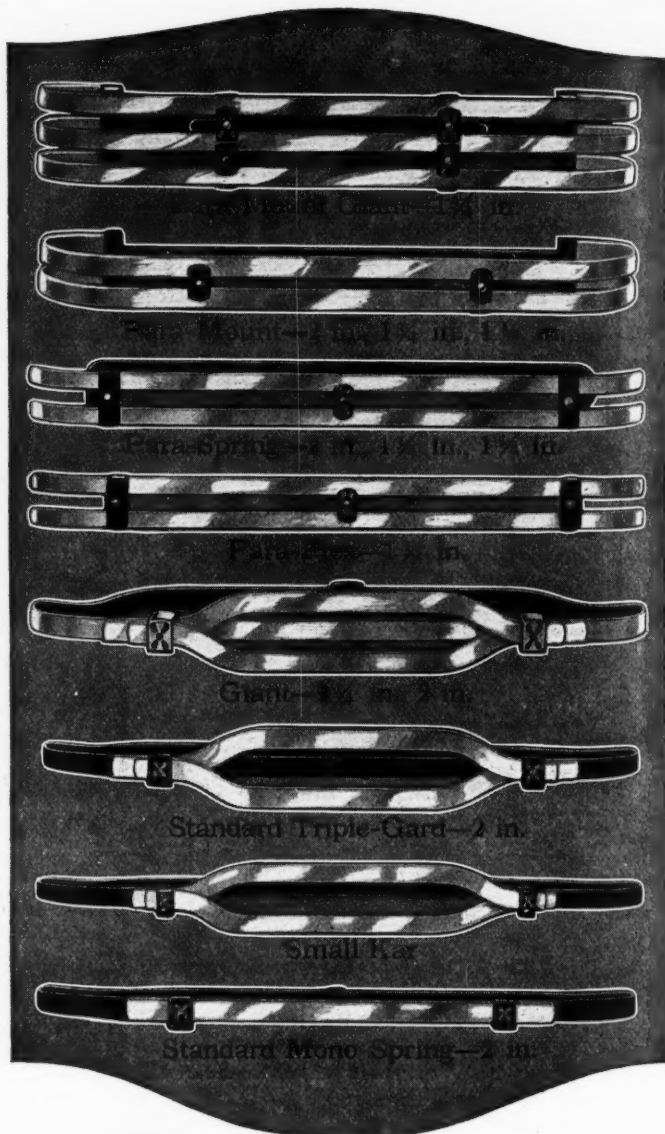
# Permanently Beautiful

Dealers who have handled Gemco Bumpers for years and who have serviced cars equipped with all kinds of bumpers, frequently compliment our salesmen on the durability of Gemco finish.

A good bumper deserves a good finish. Being the world's oldest bumper manufacturer, we have learned to excel not only in design and resilient strength but in a finish that endures.

Get our dealer proposition and our new catalog No. 31 showing models and stay-tight attachments for all cars.

**Gemco Mfg. Co.**  
760 So. Pierce St.  
Milwaukee, Wisconsin



**Gemco**  
**BUMPERS**

Write for  
this free  
Catalog

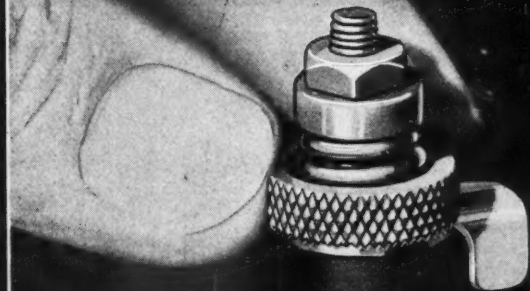




*A Twist of the  
Finger Gives a  
Perfectly-Operating  
Valve*

## For Over-head Valve Motors

PATENT APPLIED FOR  
INVENTED BY  
V. V. VAN NATTAN



# Gemco

## Rapid Valve Adjuster

**No Skill, No Tools Needed  
for Perfect Adjustment**

### Dealers

Gemco Rapid Valve Adjusters instantly appeal to motorists. They eliminate the noise of overhead valves and assure a quiet-running motor, the saving of fuel, increased power and freedom from valve trouble. Get ready to supply the demand.

Put this self-sale display carton on your counter. It will prove a new source of profit.



This simple but effective device enables the car owner to adjust valve clearance easily, accurately and instantly without tools. Adjustment can be made on the road, with the motor running, and without soiling the hands.

Overhead valves should be adjusted every 500 miles. The average mileage of a car is 6,000 miles per year. Think of the time, annoyance and money saved your patrons by the Gemco Rapid Valve Adjuster.

Each notch on the knurled dial represents one-thousandth of an inch. To insure correct clearance merely turn dial with thumb and fore-finger.

Gemco Adjusters are quickly and easily installed by car owner. Take the place of regular rocker-arm adjusting screws. Satisfaction guaranteed.

*Write us direct if your  
regular supply house  
cannot fill your order.*

Gemco Mfg. Co., 760 So. Pierce St.  
Milwaukee, Wis.

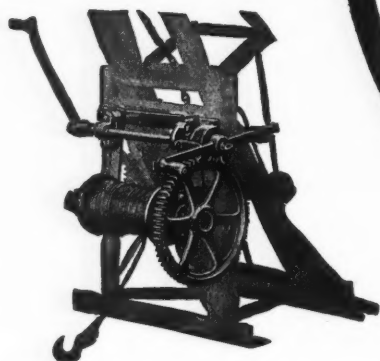
Send me description of Gemco Rapid  
Valve Adjusters, Gemco Discounts and  
name of nearest jobber.

Name.....

Address.....

**GEMCO MFG. CO. 760 SO. PIERCE ST. MILWAUKEE, WIS.**

# Get a Manley



This MANLEY Auxiliary Winch may be applied to all new style Manley Cranes. Just drill a couple of holes and attach with bolts. Drum holds 200 ft. of wire cable. Standard equipment 100 ft. Equipped with this Winch, the distance of a wreck from the road makes little difference. You drag it in, quickly and easily. Sells for \$65.



## —with the SWIVEL NOSE and the auxiliary WINCH

In line with the MANLEY policy of giving the buyer more than he can get somewhere else, we are now offering Manley Wrecking Cranes Nos. 101 and 102 EQUIPPED WITH A SWIVEL NOSE—the greatest single improvement that has appeared in a year. (This Swivel Nose can be readily attached to your present Manley Crane—no holes to drill; just bolt in place).

This Swivel prevents the chain running off the sheaves—regardless of the angle of the pull. Friction is cut down—and you GET the wreck, whatever its size or position.

Note that we are now using TRIPLE Chain—to take care of the increased lifting power (2½ tons) made possible by the double truss rods.

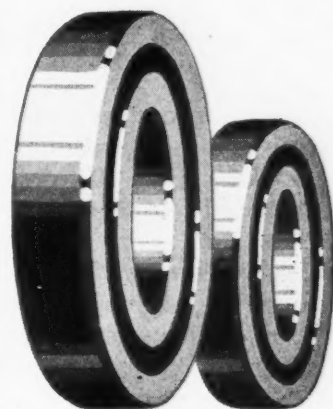
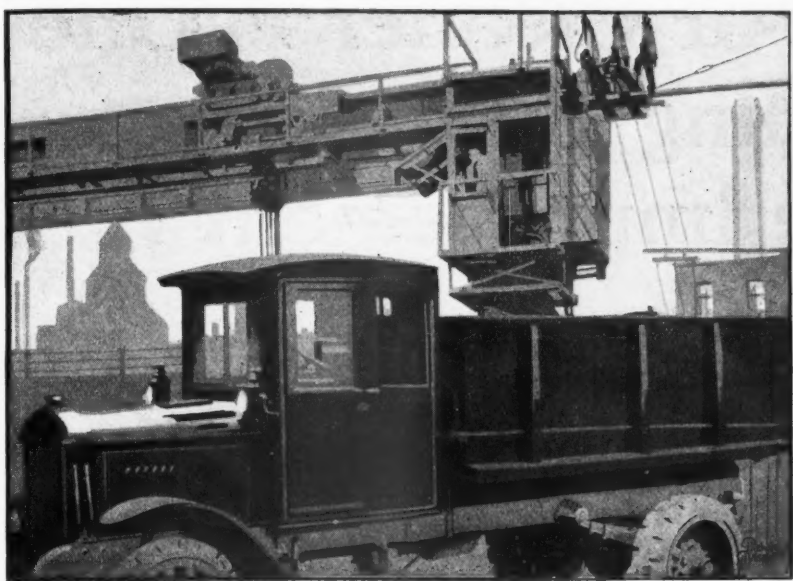
SIX LEVERAGES.—Six speeds. Two more than formerly. Chain can be used single, double or triple. And TWO Handles, permitting two men to work, if ever necessary.

The whole beam TILTS—as it MUST for proper results. Equal strength in any position. Puts very little strain on the chassis—the Self-Contained Saddle sees to this.

Changed into a portable Floor Crane in a few minutes—two cranes in one. Seven thousand Manley Cranes in daily use—you take no chance. Three sizes—2, 2½ and 5 tons. Priced \$95 up.

"HOW TO CASH IN ON A MANLEY CRANE" and Crane Bulletins mailed to any address. Buy from your jobber.

**The Manley Mfg. Co., York, Pa.**

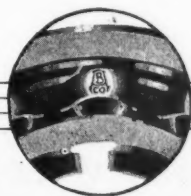


# BEARINGS FOR EVERY APPLICATION

Ahlberg Ground Bearings give long service—at much less cost than new bearings. For economy use them.

AHLBERG  
BEARING  
COMPANY

*321 East Twenty-ninth St Chicago*





# The United Air Cleaner Is One of the Outstanding Successes of the Automotive Improvement Field

The marketing of this great improvement was done in a most substantial manner—a manner that gives the product the very highest resale indorsement.

Before it was offered for resale it had been tested for its efficiency as an air cleaner—and the effect it would have on the power of a motor—by 88 manufacturers of motor cars and motors.

After it had been accepted by these 88 leaders and used on their product we announced the resale merchandising of The United Air Cleaner.

Over four years of remarkable success were behind the initial dealer announcement.

No sensationalism was required. No fly-by-night methods would do. We have builded upon the tests and indorsement of eminent engineers thruout the industry.

A host of dealers and service stations are now doing a fine business in The United Air Cleaner. It is a very desirable business that will grow and create good will for the merchant.

If your jobber is not stocking, orders will be received direct and supplied through the nearest distributor.

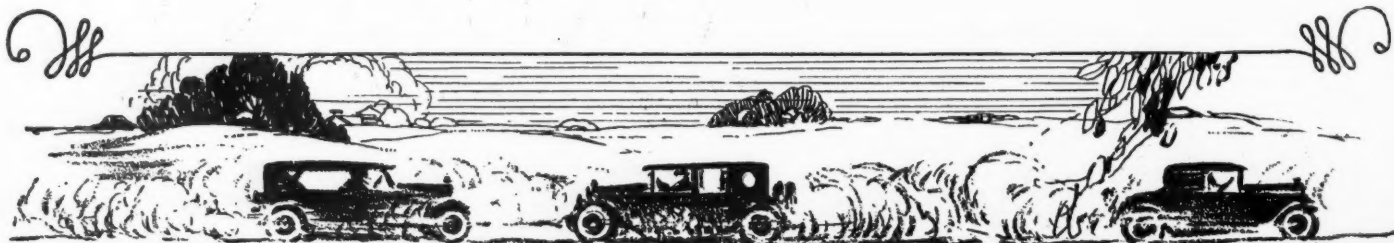
**UNITED MFG. & DISTRIBUTING CO.**  
9703 Cottage Grove Ave., Chicago, Ill.

Wm. E. Kemp, New York and New England Distributor  
245 West 55th St., New York City



Operates with speed of the intake. Rotor principle throws the dust and grit away allowing only clean air to enter the motor. All metal. No danger from back fire. Size only 4 by 4½ inches. Weighs but 18 ounces. Applied to all carburetors.

**The UNITED  
AIR CLEANER**  
DUSTLESS AIR TO THE MOTOR



Every Time

Insist  
Upon

**20c** each

(less discounts) up to 3/4" wide  
or 5" diam. Larger 35c. Most  
jobbers carry "Apex" in stock.  
Order your requirements NOW.

Genuine  
**APEX**  
Innerings

They Are the Original

To be assured the best results; to be certain of absolutely stopping piston slap, oil pumping, fouled plugs (without reboring)—always install the **Original and Only Genuine Apex Innerings**. Unscrupulous imitators, invariably offer a cheaper product, and a cheaper product means trouble for the repairman and car owner. Don't take chances—equip every "job" with "Apex Inner-

ings" and you and your customers will be more than satisfied.

The Original and Genuine Apex Innerings are engineered—made to exact size for every type motor. Look for the **Guarantee Tag**. Apex must be "right" otherwise your money is refunded.

Car owners always want their "job" rushed. The "Apex" way provides a quick, positive means of putting the motor in "tune"—it saves your customer reboring costs and enables you to handle 6 to 10 times more cars during the rush season.

Write today for full facts. Give us the name of your favorite jobber.

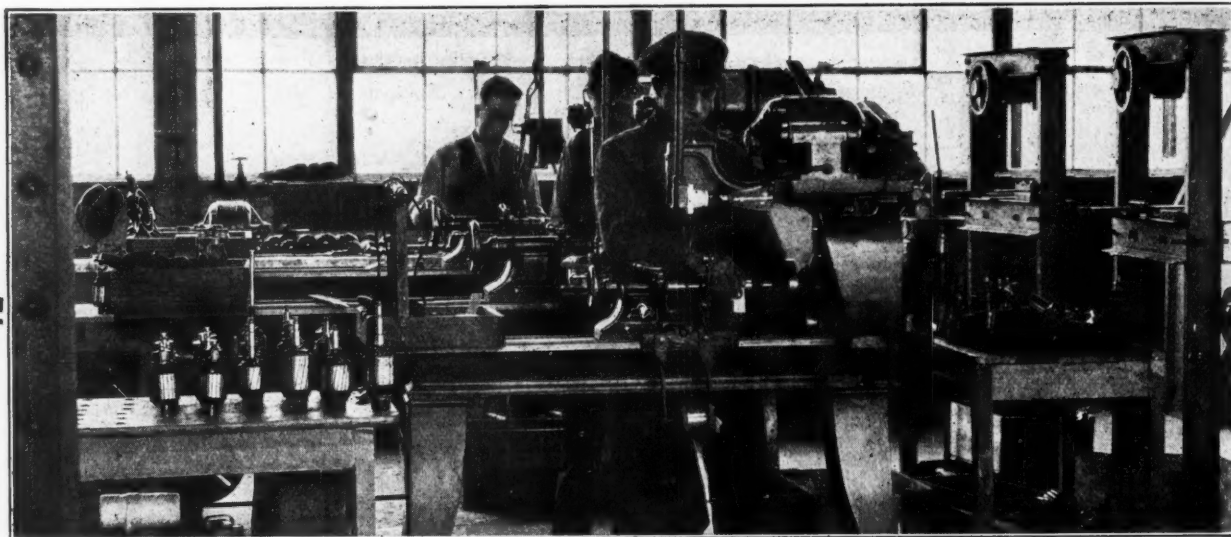


**Thomson Mfg. Co.**

Dept. C

Peoria,

Illinois



# evidence

*that we have the special equipment necessary to turn out rewound armatures equal to new.*

Here are three lathes with two Ten-Ton Presses that are used for pressing commutators on shafts.

Typical! in portraying the extent to which each of the more than 50 operations in the rewinding of an armature, has been studied and perfected.

With this special equipment and by employing a large corps of men who specialize on single operations we are able to turn out finer rewound jobs in volume!

1500 a day! our capacity! Naturally prices are cut by such volume. Cut so low that any repairman can profit thru our service.

How? Simply by removing bearings and end plates and shipping defective armature to us. We keep a large stock of rewound armatures on hand so are able to mail rewound armature the same day old one is received.

The repairman slips the remade armature in place, tacks his profit to our bill, and—that's all there is to it.

Velvet profit, really—because the job is easy, takes but little time—and our prices are so low that the repairman can realize a nice profit and still save his customer money.

## Price List

### Net Prices

Ford Generator Armatures .....	\$ 1.95
Ford Starter Armatures .....	2.00
Any make of Two Unit Generator Armatures .....	4.95
Any make of Two Unit Starter Armature Rewound .....	6.75

### Motor Generator

Northeast .....	\$11.00
Simms Huff .....	7.00
Delco .....	12.00
Dyneto .....	12.00
Detroit .....	12.00
Any Vacuum Cleaner Armature .....	3.50

Try Us—We Absolutely Guarantee Every Armature We Rewind

Our new booklet—"Low Cost Armature Winding Service"—free to every repairman. Send for it.

**H.M.FREDERICKS CO.**  
*Armature Winding Specialists*  
 Lock Haven Penna.



# FEDERAL

## BLUE PENNANT RADIATOR HOSE

### RED COVER—CALIBRATED

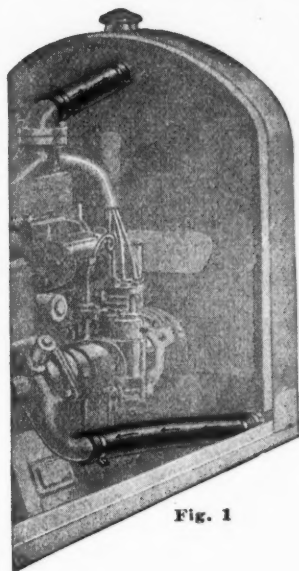


Fig. 1

**T**HIS hose is built for heavy-duty service where ordinary hose under heavy suction collapses, retards circulation and causes overheating of motor. Constructed with a heavy inner-tube, reinforced with fabric insertion of highest quality, and will stand up under the most exacting service conditions.

Figure 1 indicates the staunch manner in which this hose stands up, allowing free circulation of water through pump, motor and radiator.

Figure 2 indicates how ordinary hose is likely to collapse under the same service condition, retarding circulation and causing overheating of the motor.

Federal Blue Pennant Radiator hose is not affected by oil and anti-freeze solutions. Its red cover stock is calibrated for ready measurement, and built to resist heat, oil, grease and gasoline. An exceptional hose, made in all standard sizes, 1" to 1 5/8".

Packed 6 3-foot lengths in shipping carton.

Size-Chart Hanger packed in each shipping container.



Fig. 2

### ALL-FIBRE Black Radiator Hose



An improved hose, of ALL-FIBRE construction, which will give exceptionally good service. It is much stiffer and stronger than the ordinary three-ply fabric hose, will stand up better under hard service and last much longer.

It has withstood every test imposed, has a record of 40,000 miles without collapsing, and under boiling test has proven immune to the effects of heat, oil and water.

Made in all standard sizes. 1" to 2 3/4".

Packed 6 3-foot lengths in shipping container.

*Dealers Supplied Through the Jobbing Trade*

## THE FEDERAL RUBBER COMPANY

OF ILLINOIS

FACTORIES: CUDAHY, WISCONSIN

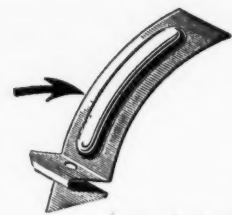
Patents  
Granted  
March 20, 1917  
March 1, 1921



# UNIVERSAL HOSE CLAMP

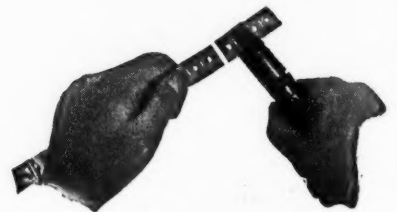
*Adjustable to fit any hose of any size*

## The Bead



An original and exclusive patented feature of the Universal Clamp is its bead which creates the pressure that makes a leak impossible.

## The Scores between holes



Another original and exclusive patented feature—The Scores Between Holes—which insures a clean, quick break-off—saving time and money.

*Always the same good quality—*

Every Universal Hose Clamp is a "good" clamp. Every clamp can be depended upon to do its full measure of work—and THEN SOME.

The Universal Clamp cannot cut or injure the hose. It is smooth-edged—no metal projects to catch in the fingers. It is **ELECTRO-GALVANIZED**—not heat treated. It is made from steel ribbons cold rolled from iron—rust-proof throughout every part.

The trade buys Universals because the trade has learned through experience that Universals are always dependable—always the same good quality.

Specify Universals—one size—1 to 3 inches—is adjustable to fit any hose of any size. Junior,  $\frac{1}{4}$  to  $1\frac{1}{2}$  for occasional needs of small hose.

Look for the name on every clamp.

**UNIVERSAL INDUSTRIAL CORP.**

HACKENSACK, N. J.

Sole Manufacturers:

DEPARTMENT OF SALES:

CHICAGO	PHILADELPHIA	BOSTON	DALLAS
F. C. West Corp.,	T. Scott Eavenson	Burton Rogers Co.	Harry Knight
618 So. Mich. Ave.	1536 Cherry St.	26 Brighton Ave.	2218 Commerce St.



© 1922

**KNOWN TO THE TRADE FOR YEARS—USED BY THE TRADE FOR YEARS**

Model  
H 60Pat.  
Appl'd  
for

# Bigger Profits

## for Garages & Repair Shops

**New, Simplified Equipment Finishes  
30 Connecting Rods Per Hour!**

Double your shop production with Hempy-Cooper Universal Connecting Rod Equipment. Consists of two new money-making inventions that are rapidly gaining favor with garage men everywhere. You can take in more work, do it in less time and do it better! Naturally this means more profits for you as well as greater satisfaction for your customers.

One machine (Model H 60 Babbitting Jig) casts babbitt bearings into rods of all makes of cars using "cast-in," "shell" or "set-in" bearings. The other machine (Model C 70) then bores and fillets the bearings. Very rapid and accurate to a thousandth of an inch. Both are practical and simple to operate. Priced so low they soon pay for themselves.

### Model H 60

The machine above is the model H 60 Hempy-Cooper Universal Connecting Rod Babbitting Jig. Equipped with mandrel for casting an oil groove into bearings. Change parts from one type rod to another in less than two minutes.

### Model C 70

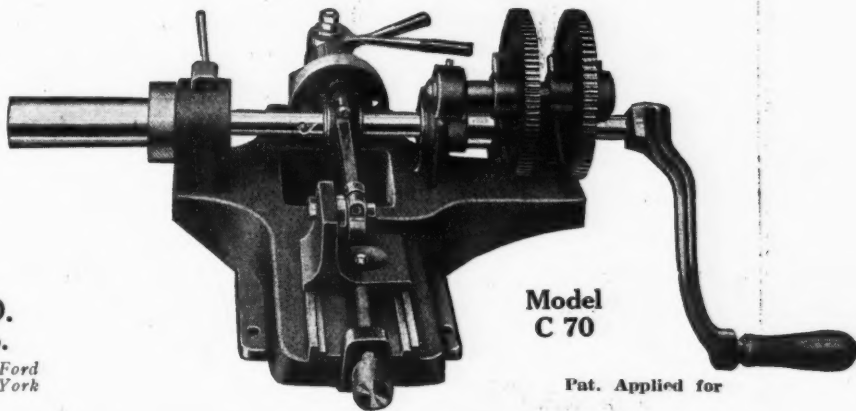
The Model C 70 Hempy-Cooper Machine (shown opposite) is operated either by hand power or electric drill. Equipped with the famous patented helix screw feed. Additional filleting collars supplied at small cost.

### Write At Once

Learn all about these two new inventions. Let us show you how to make and save money with them. A letter brings you full information, prices, etc. Write today! Address Dept. M. A.

**THE HEMPY-COOPER MFG. CO.**  
422 Archibald Ave., Kansas City, Mo.

See our exhibit at the Ford Power Equipment Exposition, Ford Motor Company Building, Broadway at 54th St., New York City.

Model  
C 70

Pat. Applied for


# HEMPY-COOPER

## Rebabbitting Appliances





(CATALOGED)  
*in the Red Directory*




**IN THE** busy shop where production is of prime necessity, a poor tool can slow up the work and put a decided crimp in the daily record of jobs done.

Quality tools are just as necessary to profits as are skilled workers. Jacobs Chucks—built on a quality foundation—eliminate the costly delays by helping the mechanic do a better job quicker and with less effort.

THE JACOBS MFG COMPANY, HARTFORD, CONN.

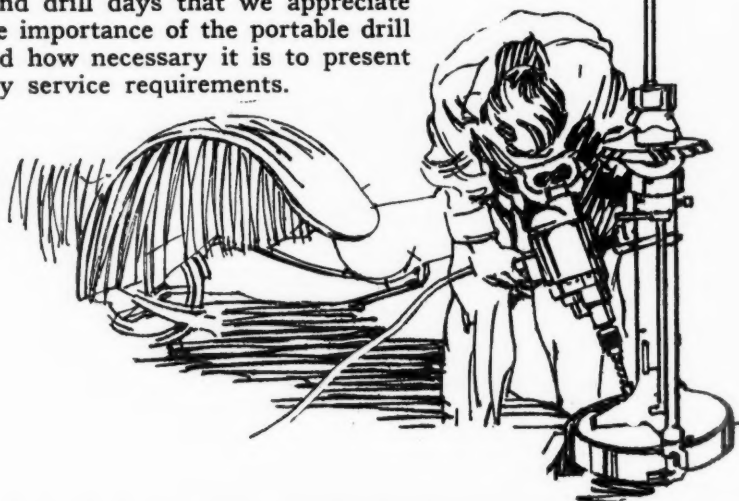
*This advertisement inserted in the interest of better Service Equipment in general and of the use of Portable Electric Drills in particular*



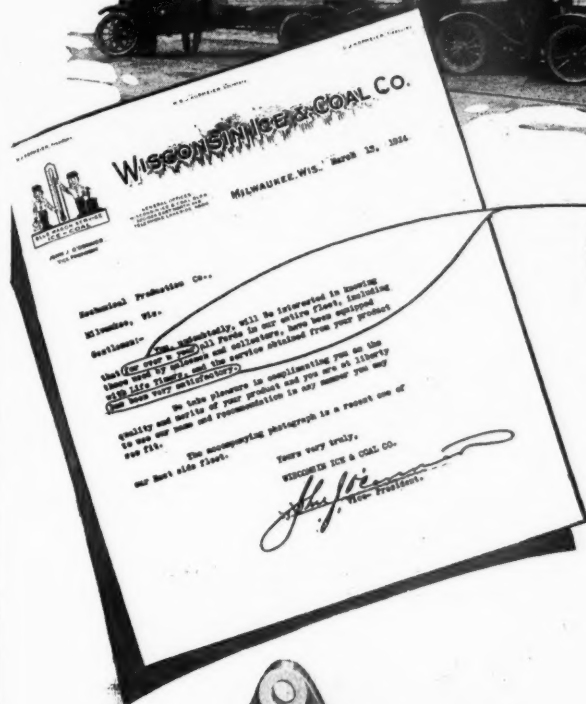
## The Emergency Job

When the call comes for a speedy repair job—well done—where would the modern shop be if it weren't for the electric portable drill?

It isn't until we look back to the old hand drill days that we appreciate the importance of the portable drill and how necessary it is to present day service requirements.



*The World's Largest Producer of Drill Chucks*



## (For *over* a year

The records of this fleet show, that every Life Timer installed is still giving perfect service and that it has not been necessary to repair any of them in more than fifteen months.

# Life Timer

for Fords

This Life Timer is no experiment, for it has proven its unusual value throughout the country, wherever Fords are run.

It requires no oil. It is short-proof and fool-proof. When you install it on Fords in your town you will know that each one will wipe millions of perfect contacts even if there is wobble or end-play in the old Ford cam shaft.

Ask your Jobber to ship you an attractive counter display carton containing a trial lot. The discount is generous.

If your Jobber cannot supply you, write to us for illustrated folder and lists of discounts.



**Retails at \$2.00**

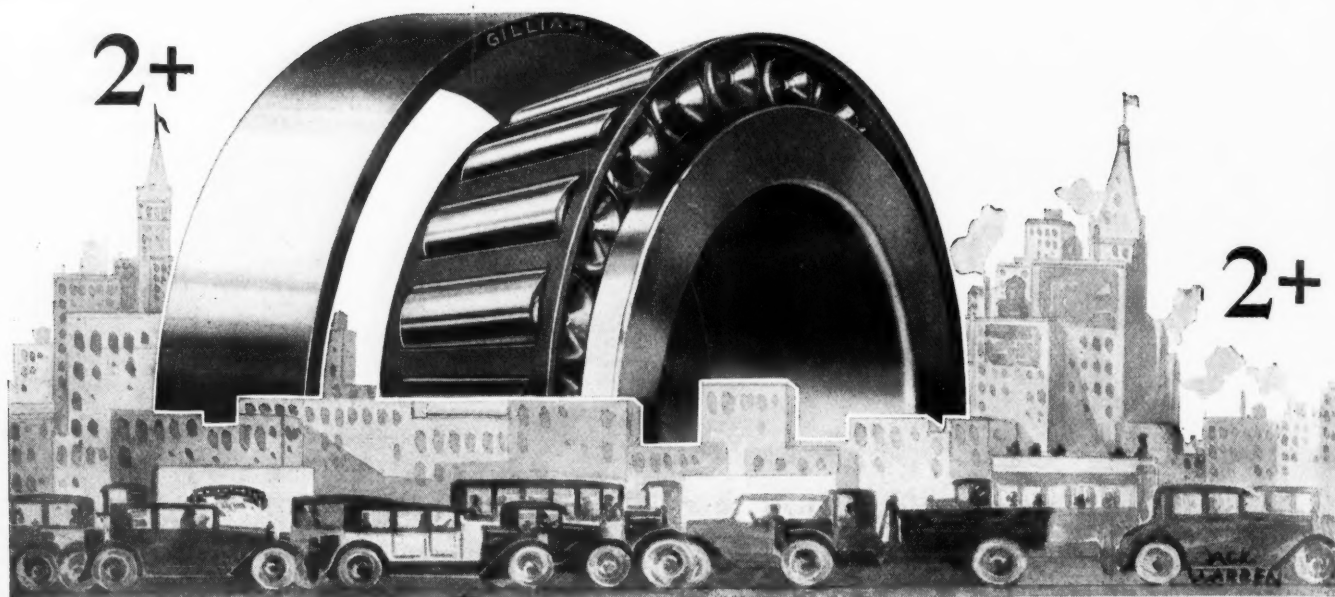
East of the Rockies

Jobbers are invited to write for illustrated folder, discounts and sample, which will be sent free.

Get your share of this business. Write today.

**Mechanical Production Company**

Milwaukee, Wisconsin, U. S. A.



## Two or more Tapered Roller Bearings in practically every make of automotive vehicle offer you Gilliam Bearing replacement possibilities.

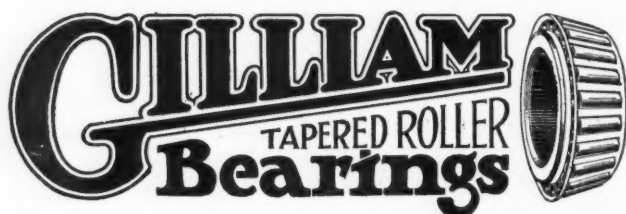
The thing that makes a Gilliam Bearing replacement business so profitable for the dealer is the fact that these Tapered Roller Bearings interchange as complete units with other makes of Tapered Roller Bearings and with certain sizes of ball bearings.

Practically every owner of automotive equipment is a prospect for Gilliam Service. This means more prospects—more patrons—more profits.

Gilliam Tapered Roller Bearings are made in a multitude of sizes—complete stocks of which are carried by Gilliam Distributors who will give instant service on your orders.

Be the local Gilliam man. Get these added profits. Ask for the details. If you don't know your nearest Gilliam Distributor—write us direct.

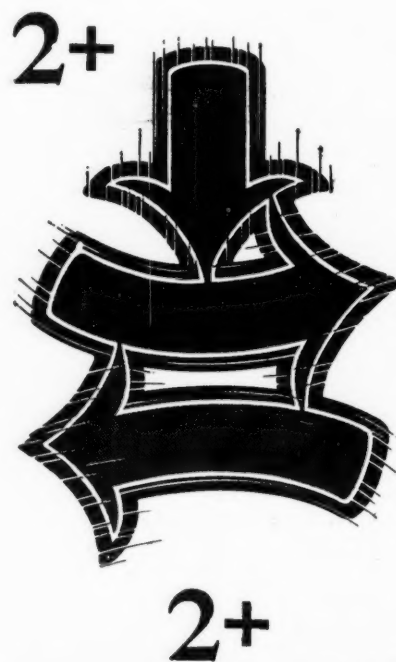
The GILLIAM MANUFACTURING CO.  
Canton, Ohio



The arrow symbol signifies the recognized ability of Gilliam Tapered Roller Bearings to carry all combinations of radial and thrust loads from all directions.

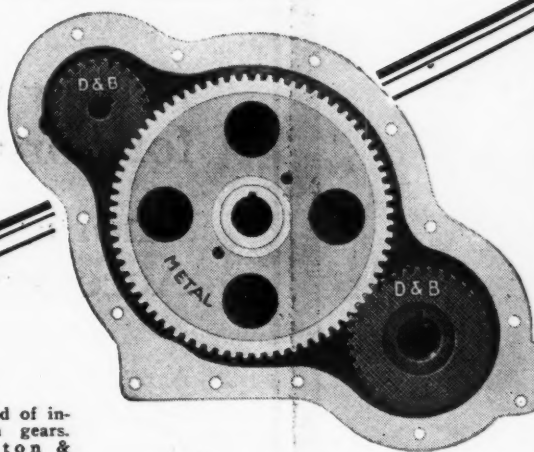
They are used as standard equipment in 74 makes of passenger cars and trucks.

Gilliam Bearings are made of high grade alloy steel.





Get a kick out of  
your service jobs—  
and fewer kicks against them



The approved method of installing composition gears. Developed by Dalton & Balch, Inc., and accepted as standard by a majority of the best automotive engineers.

Many Service Men have learned that it is easier to turn out service jobs approximating new-car condition if they complete their work with the installation of



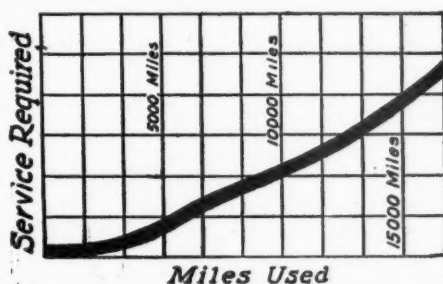
## The Original Silent Timing Gears of Celeron

These men make it a rule to recommend the use of "D & B" silent gears even to customers who come to them with service jobs of but moderate size.

They know these silent gears to be tougher than metal and that their resilience will absorb front-end vibration experienced with other timing gear trains. They know that the methods used in "D & B" production result in an accuracy impossible to achieve by any other process.

### Get your share of this business

"11 million cars are over a year old and regularly require service."—Motor Age.



From a chart published by "Motor Age," showing the increased demand for service with increased car mileage.

This service consists of grinding valves, re-lining brakes, etc. and "At fifteen thousand miles cylinders must be re-ground, pistons and rings applied and bearings taken up—These and other operations must be performed at regular intervals thereafter."

Those who are alive to the value of turning out a completely silenced job will include, with every over-haul, the installation of

**GENUINE "D & B" SILENT  
TIMING GEARS**

### Will not distort from any cause

Some of these men have had experience with all types of silent timing gears. They would tell you that they have never known a Genuine "D & B" Silent Timing Gear to vary as much as one-thousandth of an inch while they have known others to lose their efficiency after a few miles of service through either inaccuracy or gross distortion with consequent rapid wear.

Many of them, having gone to the root of the matter, are convinced that, by the stabilization of all material entering into "D & B" gears, the makers have secured the only possible way to produce a composition gear which will not distort from any cause.

Why should you experiment? There is only one Genuine "D & B" Silent Timing Gear and it is the original—made right and stabilized. You will get a lot more out of your service work when you make their installation standard practice.

You can get these Genuine "D & B" Silent Timing Gears.  
You should be satisfied with nothing less.



2333 Michigan Blvd.

Chicago, Ill.

Incorporated

New York Branch: 157 W. 51st Street

Members of American Gear Manufacturers Association

## A New Convenience for Ford Owners.

## Another fast Moving Accessory for all Dealers.

Another fast moving, profit producing accessory is ready for dealers to take hold of.

Another worry, plus a danger, is to be taken off the shoulders of all Ford owners.

Mac's Gaselevator—a vacuum gas feed and emergency reserve combined—ends all hill climbing in reverse. The Ford gravity system is laid aside and big car vacuum efficiency takes its place.

The main gas tank may go dry and the car brought to a stop. By simply turning a stop cock enough gas is released for eight miles of travel.

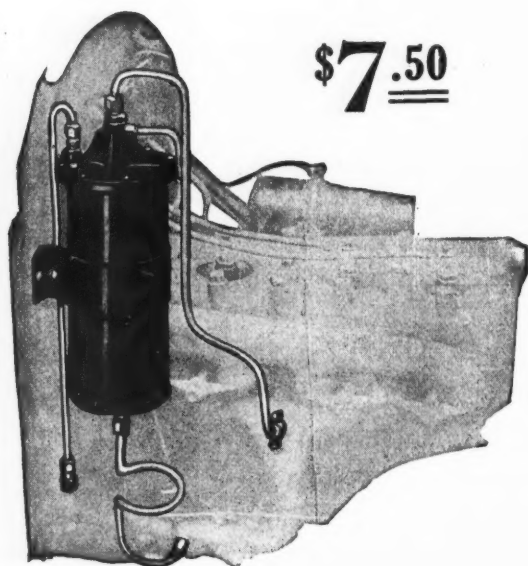
A vast market, 5,300,000 registered Ford cars, is waiting.

Are you ready! A line will bring full information. Write today.

The Mountain Accessory Co. Emporium, Penn.

# Mac's Gaselevator

A VACUUM GAS FEED AND EMERGENCY RESERVE COMBINED

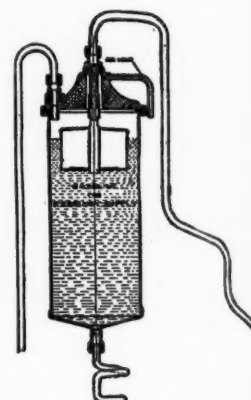


**\$7.50**

Mac's Gaselevator and Emergency Reserve combined uses the vacuum of the motor to bring gas from the main tank to a tank right over the carburetor. Enough gas is reserved in this tank for eight miles of travel.

When the main tank is empty no gas is delivered to the carburetor until the reserve supply is released by turning a stopcock. When the main tank is refilled the reserve supply is automatically replenished.

Mac's Gaselevator is sold for \$7.50, less than half what is usually paid for a device offering only one of its features. This price includes all fittings needed for installation, a simple job taking a half hour.



# Your Closed Car Prospects Want the Comfort Given By a Perfection Heater



AUTOMOBILE dealers say that the Perfection Heater is an inestimable help in making closed car sales.

And that's easily understood.

For fourteen years Perfection Heaters have been robbing winter driving of its hardships.

Car owners have come to expect the warmth and comfort that the Perfection Heater alone can give.

Consequently, when you tell them that your car has a Perfection Heater they immediately count it a definite asset.

If your closed cars are not coming through Perfection-equipped, why not write your factory about this big sales advantage. Meanwhile, equip your demonstrator with a Perfection Heater. Tell your prospects you can make the installation. Your jobber will serve you promptly.

THE PERFECTION HEATER & MFG. CO.  
6545 Carnegie Ave. Cleveland, Ohio

Manufactured in Canada by  
Richards-Wilcox Canadian Co., Ltd., London, Ont.

There are several types of Perfection Heaters. Protect yourself against imitation by looking for the Perfection name plate. You will find it in plain view on every genuine Perfection Heater.

These manufacturers provide real winter driving comfort by equipping their closed models with Perfection Heaters without extra charge.

Auburn  
Buick  
Case  
Cunningham  
Durant  
Elcar  
Elgin  
Flint

Gardner  
Hupmobile  
Kissel  
Meteor  
McFarlan  
Marmon\*  
Maxwell  
Moon

Nash  
Oakland  
Paige  
Pierce-Arrow\*  
Premier  
R & V Knight  
Stephens  
Sterling-Knight

Stevens-Duryea  
Studebaker  
Velie

Taxi-Cabs  
Anchor Cab  
Bender Cab

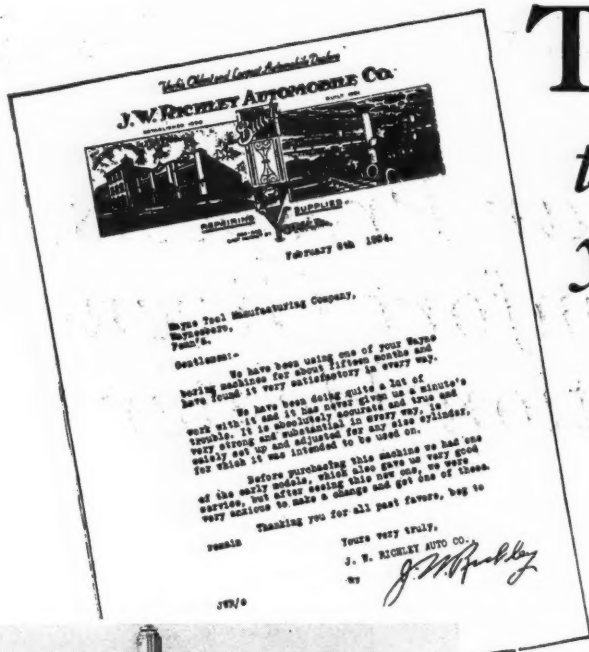
Checker Cab  
Kelsey Cab  
Luxor Cab  
Premier Cab  
R & L Cab  
Roamer Cab  
Yellow Cab  
\*Special Equipment

# PERFECTION HEATERS

For Motor Cars

THE HEAT IS THERE—WHY NOT USE IT?





# Time Saving— that's what makes your profit!

Eliminate the time you lose in removing cylinder blocks for reboring.

That's where your profits leak out on this class of work. The Wayne Portable Cylinder Boring Machine can handle 95% of your cylinder reboring jobs without removing the blocks. It has the mechanical features of a high grade stationary boring machine with the added advantage of being portable.

It bores absolutely square to the face of the block. The cutter will not follow the bore of a cylinder that is out of line.

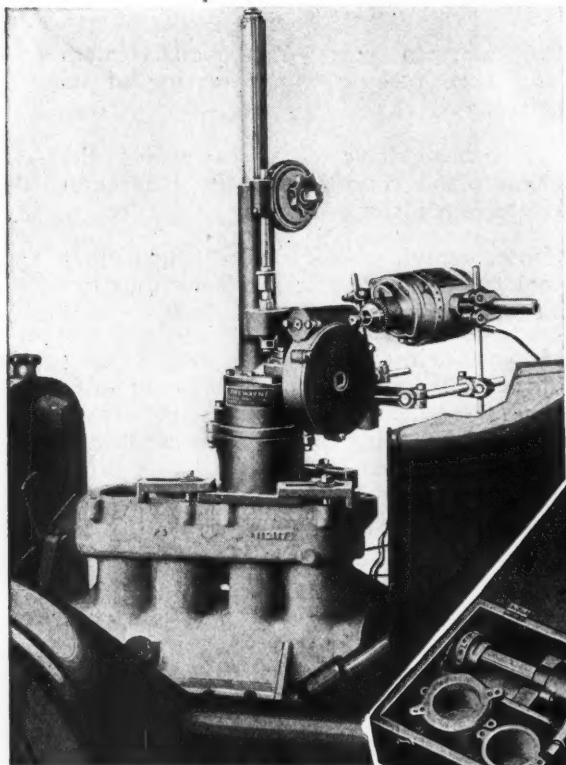
Handles any cylinders from 2½" to 5 1/16" diameter. Can be driven by hand, small motor or electric drill.

You can give accurate estimates on reboring jobs with this machine. Many testimonial letters from users bear out our statement that it is profit making equipment.

Investigate the possibilities of increased profits on cylinder reboring jobs in your shop. Write for descriptive circular.

We also manufacture high grade reamers, valve reseating tools, bearing mandrels and valve facing tools.

**Read  
this  
letter!**



Above illustration shows the application of the Wayne. Each machine is packed in a heavy oak case with complete instructions for use, as illustrated.

**Wayne Tool Mfg. Co.**  
Waynesboro, Pa.

# WAYNE

## Cylinder Boring Machine

Now ~~\$1.25~~  
**75¢**  
each



*The original compression ring for replacement. Its greater flexibility and equal tension mean better performance in worn cylinders.*



*The original oil reservoir ring for oil pumpers. Collects excess oil on each down stroke and empties on each upstroke, which ordinary grooved rings cannot do. Use one on each piston.*

Now ~~\$1.00~~  
**50¢**  
each

# Lower Prices Bigger Volume More Profit

The same high quality at new low prices.  
No change in trade discounts.

**Remember**

*The best profits are in the best parts. Poor replacement parts can ruin a good mechanical job.*

Have your jobber's salesman show you the complete McQuay-Norris line of piston rings, pistons, pins and bearings. Ask him for the new 1924 prices.

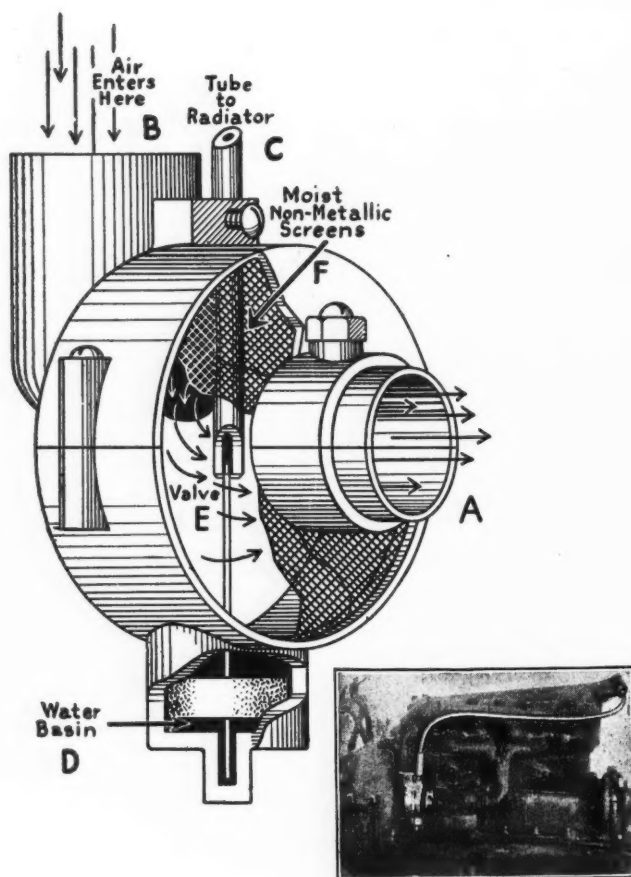


## McQUAY-NORRIS

**PISTON RINGS - PISTONS - PINS - BEARINGS**

McQUAY-NORRIS MFG. CO., General Offices, ST. LOUIS, U. S. A.

Factories: St. Louis, Indianapolis, Connersville, Ind.; Toronto, Canada



## The La Rose Air Stabilizer— How it Works

Stabilizer connects with air intake on carburetor at Point A and with stove or hot spot at Point B (left open if car has no pre-heating attachment). Pipe at Point C connected by copper tubing to upper radiator hose connection (by simply drilling and tapping  $\frac{1}{8}$  inch hole in pipe connection). Water from radiator, flowing through this pipe, fills reservoir D and is automatically maintained at proper level without overflowing by valve E. Special non-metallic screens

F, by absorbing water from reservoir are kept thoroughly moist at all times. Air enters Stabilizer at Point B and in passing through wet screens F is divided into many small jets. Each of these minute sprays is literally washed of all dust and dirt and delivered to the carburetor clean and saturated with moisture. This clean moist air causes complete combustion with no carbonization and produces greater power and speed with less gasoline consumption.

# evening all the time

**S**EVERAL years ago engineers learned that motors ran better in the evening or in cool damp weather simply because of the moisture in the air. Tests showed them that a mixture of gasoline and air would explode completely only when the air was saturated with moisture.

Since then, internal combustion engine experts have been constantly striving to mechanically reproduce in the small area at the air intake on the carburetor perpetual damp weather conditions.

Lasco Engineers have accomplished this feat! They have even gone a step further and in the Air Stabilizer have produced a device which not only provides a condition of "evening all the time" but is also an air cleaner. The Air Stabilizer moistens air by washing it as explained in description above!

### "Plus" Sales Possibilities

Today, when Air Cleaners are discussed in the same breath with 4-wheel brakes, seven bearing crankshafts, etc.—think of the sales possibilities of the Air Stabilizer which has all the features of an air cleaner *plus* the advantages of a humidifier.

For besides cleaning the air—by moistening it, the Air Stabilizer prevents carbonization, increases power, and speed, decreases gasoline consumption, and lessens wear on pistons, cylinder walls and bearings.

That it *actually accomplishes these results* is proved by our 30-day absolute money-back if not satisfied guarantee!

The Air Stabilizer is made for all cars. Easily installed. Having but one moving part, it will last indefinitely. Write. Our Jobbers' terms are liberal. Special distributor proposition for dealers.

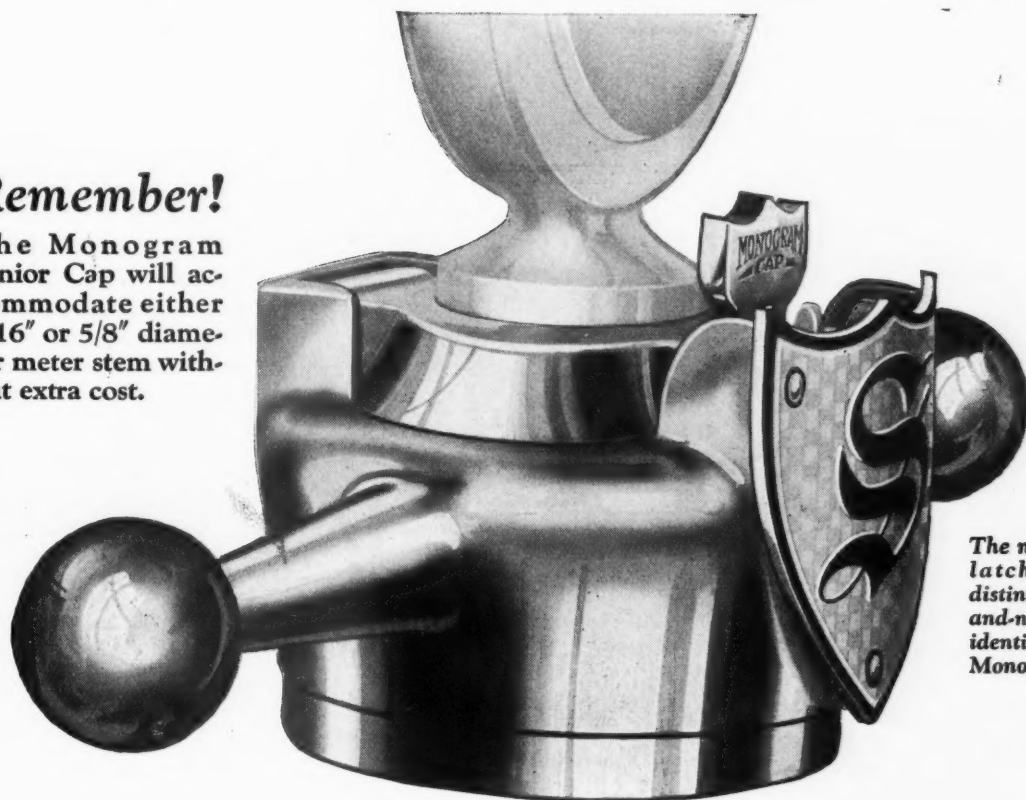
**Lasco Corporation**

**Niagara Falls, N. Y.**



### Remember!

The Monogram Junior Cap will accommodate either 7/16" or 5/8" diameter meter stem without extra cost.



The name on the latch and the distinctive black-and-nickel shield identify genuine Monogram Caps.

## Never So Many Selling Elements

Monogram beauty on a car enthuses the owner himself; and wins the admiration of the man on the sidewalk.

Monogram convenience works for the owner every time he fills the radiator; and Monogram self-locked protection works for him every time he parks.

Never has there been such a complete array of selling elements in one accessory. The Beauty, Utility, Personality and Mechanical Excellence of genuine Monogram Caps are the best of selling aids. Yet the Monogram dealer-help policy is perhaps the broadest you know. See your Monogram distributor.

GENERAL AUTOMOTIVE CORP., 600 W. Jackson Blvd., CHICAGO

**MONOGRAM**  
**ORIGINAL**  
SELF LOCKING RADIATOR CAP

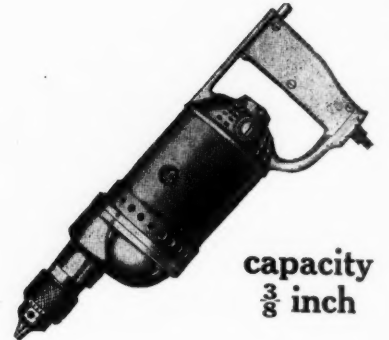
**Compare  
the  
Prices**



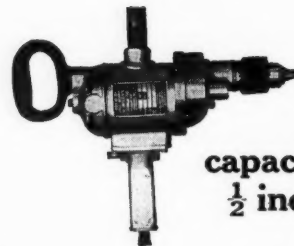
**more drill**



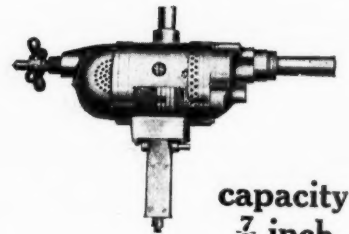
capacity  
 $\frac{1}{4}$  inch



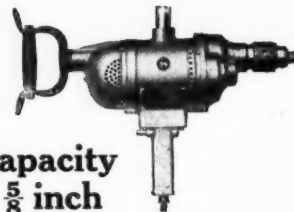
capacity  
 $\frac{3}{8}$  inch



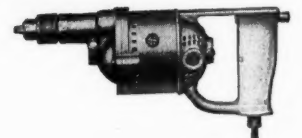
capacity  
 $\frac{1}{2}$  inch



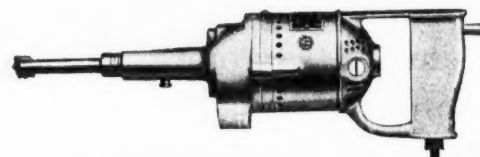
capacity  
 $\frac{7}{8}$  inch



capacity  
 $\frac{5}{8}$  inch



capacity  
5-16 inch



U. S. Valve  
Grinder

***"The Good  
Mechanic  
Knows"***

**UNITED STATES**

# value than you ever expected for the price!

In this day of keen competition in the portable electric drill business, shrewd buyers are not permitting attractive low prices alone to sway their portable drill purchases—quality is a consideration they keep in mind.

Consistent close adherence to a definite high standard of quality in the manufacture of U. S. Portable Electric Drills, has earned them a place of prominence in the minds of good mechanics everywhere—has earned them the deserved reputation of "hard to beat" among the men who have measured their qualities by years of service.

There's no economy in buying by price alone! With this sound reasoning in mind you will be particularly interested in the U. S. line, for you can buy **this equipment of recognized value** at no greater cost! To buy a U. S. Portable Electric Drill is to get more drill value than you ever expected for the price.

When buying light types of portable electric drilling equipment, remember, look for **ball bearings in the armature spindle** as well as the thrust bearing. You'll find them generously supplied on all U. S. light types—another feature of quality construction. Send for catalog 21-C which describes the complete U. S. line in detail. Choose the types most suited to your needs. Compare them with other makes. Then compare the prices at your jobber.

**THE UNITED STATES  
ELECTRICAL TOOL CO.  
CINCINNATI, OHIO.**



District Sales Offices and Service Stations

Boston  
Buffalo  
Chicago  
Cleveland

Columbus  
Detroit  
Houston  
Indianapolis

Kansas City  
Milwaukee  
Minneapolis  
New York

Philadelphia  
Pittsburgh  
St. Louis  
Toledo

Complete stocks carried in all Service Stations

# Portable Electric DRILLS

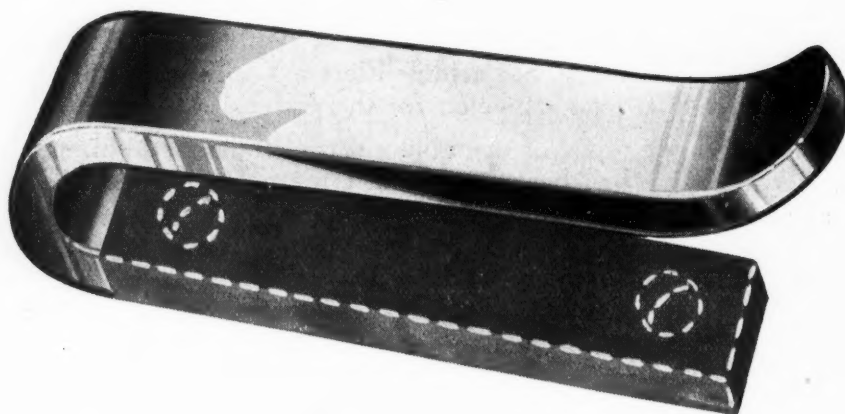


## THE BEST ACCELERATOR FOR FORDS

205,735

**Fords were delivered  
during the month  
of March**


And every one is a prospect for a Bull Dog Foot Accelerator. You will get your share of this big business by having an ample supply of Bull Dogs on hand at all times. Cash in on this—the biggest Bull Dog Year.



**T**HERE'S great satisfaction in selling a product you know to be absolutely right. You serve your customers well and yourself better when you sell Bull Dog Foot Accelerators for Fords. They have been on the market long enough to iron out any kinks. Their action is smooth, positive, easy. They are uniform in construction. They fit all Fords and carburetors for Fords. They are guaranteed. You take no chances when you say—"Bull Dogs are the Best Accelerators for Fords."

*The price as always is \$1.50 in the U. S. A.  
(\$1.90 in Foreign Countries)*

THE W. H. THOMAS MANUFACTURING CO., SPENCER, IOWA



## Easiest thing in the world to sell Meachem Gear Rings

When flywheel gears are broken or battered the starter works badly or maybe doesn't work at all.

That's the time to sell the car owner on a Meachem replacement.

You can fix him up quickly. Simply turn off the battered teeth and shrink on the Meachem ring.

He gets a flywheel that's better and stronger than new which costs him less than would a new flywheel replacement. And you make a bang up service profit besides the discount on the ring.

The correct  
tooth shape  
for a perfect  
mesh.

**Make  
More  
Money**

Easiest thing in the world—try it.

Meachem Rings are made of .30-.40 carbon steel and NEVER come apart at the weld. They are accurately machined and are sold at the lowest prices of any quality rings. Get our proposition.

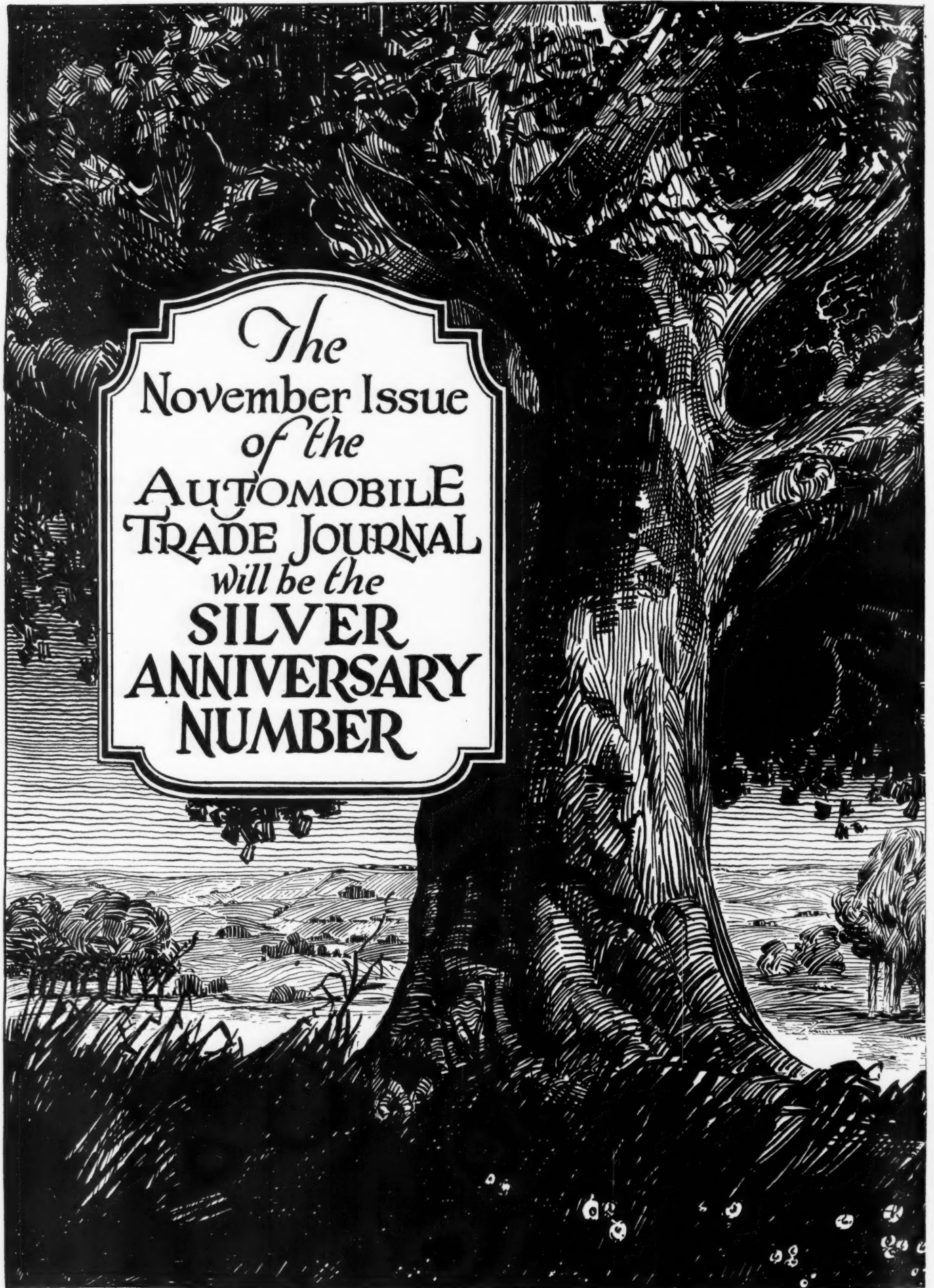
Ring Department

**THE MEACHEM GEAR  
CORP.**

Syracuse, N. Y.

FOR FLYWHEELS

# Meachem Steel GEAR RINGS



*The*  
November Issue  
*of the*  
AUTOMOBILE  
TRADE JOURNAL  
*will be the*  
**SILVER  
ANNIVERSARY  
NUMBER**





# Twenty-Five Years of Growth *in the* Automobile Industry

The November issue of the Automobile Trade Journal will mark the completion of twenty-five years of service as an automobile publication.

The occasion will be fittingly celebrated by the issuance of a Silver Anniversary Number of exceptional interest and attractiveness. It is planned to make this the finest issue ever brought out by an automobile trade paper.

Both the industry and the trade will be greatly interested in this number. Its character and appearance will assure a careful reading and a long life.

The use of good space in this issue should prove very profitable. It is not too early to make plans for it. For additional information address

**AUTOMOBILE TRADE JOURNAL**

Chestnut and 56th Sts.,

Philadelphia

*A United Publishers Corporation publication*

# Rie-Nie

Trade Mark Reg.

## FAN BELTS

*Fit Every Car With Fewer Sizes!*

You don't have to carry a large stock of fan belts, requiring a big investment in many shapes and sizes.

Rie-Nie Vee Round Belts fit any grooved pulley, regardless of the angle or pitch. With but twenty standard sizes your stock is complete. Rie-Nie Flat Type Belts fit regular or crowned pulleys. There is a Rie-Nie Fan Belt for every make of passenger car, truck, tractor and circulating water pump.

The special Rie-Nie construction brings customers back for repeat sales. Many plies of rubberized fabric are vulcanized together assuring strength, long wear and power. After one trial of a Rie-Nie Belt car owners know that while they can buy higher priced fan belts, they cannot find any better.

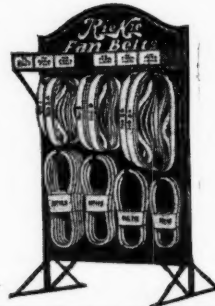
There is money in selling fan belts the Rie-Nie way. You turn your stock quicker; your investment is smaller; your profit is greater.

Put your selling efforts where you can earn the most profit. Ask your distributor for Rie-Nie Belts, or write direct for complete information.

DURKEE-ATWOOD CO., Minneapolis, Minn.



Cross section of Vee Round Belt. Note how snugly belt conforms to shape of pulley.



### FREE Display Rack

This attractive display rack for Rie-Nie Fan Belts given to dealers free of charge with one minimum stock order. It is a real silent salesman, that stands in the front of your store, reminding car owners to buy Rie-Nie Belts from you. Ask for details. It will help you sell more fan belts than ever before.

## Rie-Nie Automotive Products

All in One Dressing  
Aluminum Enamel  
Battery Paint  
Bearing Blue  
Clutch and Brake  
Compound  
Enamel (Air Drying)

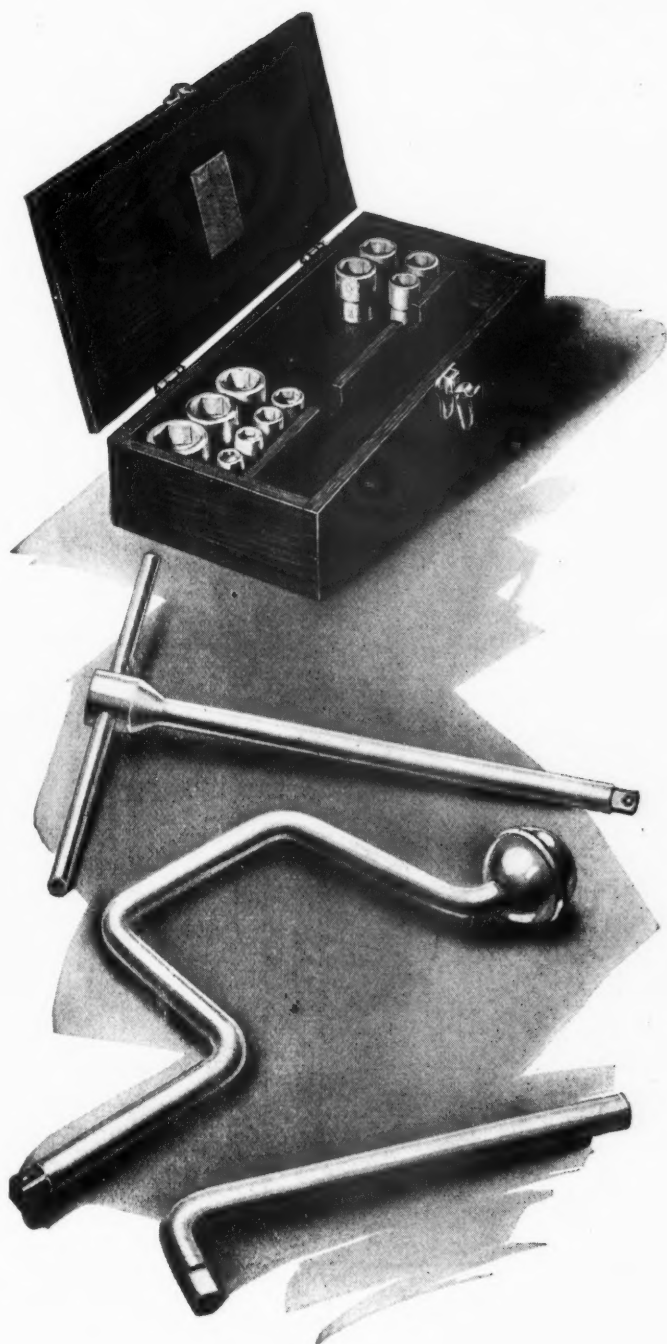
Enamel (Cylinder)  
Fan Belts  
Gasket Cement  
Graphite  
Leather Dressing  
Metal Polish and  
Nickel Polish

Patch  
Pedal Pants  
Polish—Auto Body  
Radiator Cement  
Orange Shellac  
Radiator Hose  
Friction Tape

Rim Paint  
Rubber Cement  
Shellac (Gasket)  
Rubber Filler and  
Cement  
Spring Lubricant

Tire Mica and Tire  
Talc  
Tire Paint  
Valve Grinding  
Compound  
Varnish (Clear Auto)

# Something New in Socket Wrench Sets!



Boost your spring business with this new No. 25 Socket Wrench Set. It is particularly designed for heavy duty, each part being made from extra heavy stock.

General mechanics and garage men are enthusiastically buying this new 25 Interchangeable Socket Wrench Set. This price is reasonable, too.

Three extra heavy handles of approved shapes are provided. Twelve heat treated hex sockets, ranging from 7-16" to 1 1/4" in size, provide a wide working range.

Complete set is packed in strong substantial tool box, designed for convenience and durability.

**WALDEN-WORCESTER**

INCORPORATED

475 SHREWSBURY STREET

WORCESTER, MASS., U. S. A.

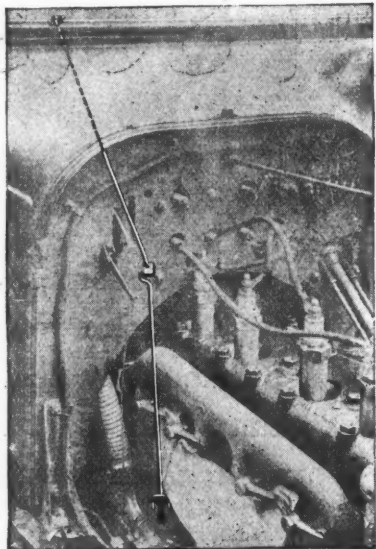
*Ask your Jobber  
about this New No. 25 Set*





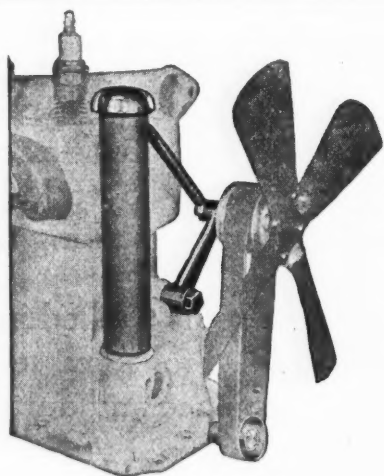
# Are you selling all these Krafve Products

## and getting all the profit



**Krafve Primer & Gas Adjuster Combined**

Simplifies carburetor adjustment by bringing it to the dash. Installed in 3 minutes. Takes the place of standard Ford choker. No drilling necessary, pliers are only tool needed. Earns its cost in flexibility and fuel economy. A lean mixture on smooth roads; a richer mixture to take the hills. Aluminum dial adds to appearance of dash. Model A, 1924 coupes and all sedans. Model B, all tourings, runabouts and all coupes previous to 1924. Price \$1.00.



**Krafve Oil and Fan Pipe**

Makes it easier to pour oil into the engine and automatically keeps your fan belt tightened without attention and because of its extended height and the felt washer at the bottom of the pipe, it keeps water, grit and dirt out of the crankcase. Price \$1.00.

Krafve Products for Ford cars and trucks are real improvements. Well made, strong and substantial.

Display them in your salesroom and they will sell and repeat. You can not sell what you have not got or do not display or talk about. Don't be a dead one. If so you will not last long in the automobile accessory, parts and necessity business. If your jobber is not up to mark and offering the improved Krafve parts for Fords, tell him so, he will wake up when he sees you know what is good for you to have for sale. To do business—to make money—you have got to have something to sell. A salesroom with many different parts and accessories for Fords, and they are 50% of all automobiles, well displayed and shown up by talking about them will draw the Ford owner and user to them and make sales. That is business.

Silence is all right in a cemetery, but not in a salesroom. Ford owners are always looking for parts that will improve their Fords. You will see that the store that displays and talks Ford improvements has many customers in the salesroom. Have Ford owners get the habit of coming to your store to see what the market has got to offer in improvements for their cars. **LEAD;** don't trail behind the demand for parts that can be sold. **ACTION** is what counts among living beings. The more active you are, the more parts you move. Thus the more profits you make.

Why does Ford have so many cars to sell? Because he is active in producing them, displays them and sells them. He is a live one—up and coming all the time. **ACTION.** But he has no monopoly on action or speech. **YOU** know that, and you know that is what produces things, sells things,—action and speech.

Display and talk in your salesroom Krafve Improved parts for Ford cars and trucks.

### KRAFVE AUTOMOTIVE CORPORATION

Oakham, Mass.

ALUMINUM CASTING

KRAFVE MIXER MANIFOLD

PATENT OCT. 3, 1922

OAKHAM  
MASS



**Krafve Steering Column Brace**

Holds Ford Steering column rigid at all times. When once put on and fastened tight, it will never give or loosen. Made of pressed C. R. Steel and comes complete with extra large bolts and nuts. Every Ford needs one. The low price means easy sales. Enameled \$1.75. Nickel, \$1.00.



**Easy to Install**

Simply remove the regular Ford Intake Manifold and Carburetor.

Bolt Carburetor to KRAFVE Mixer Intake Manifold with the same bolts and nuts. Clamp back on cylinder in same position.

# KRAFVE

## Improvements for the Ford Car



## Moulds in the fingers like putty—

Here's a packing for automobile water pumps that you work into shape with your fingers like so much putty.

When you're through fitting it to the leaky stuffing box—you've got a tight, permanent packing that becomes a smooth metal bearing *which you can adjust or take up if ever needed.*

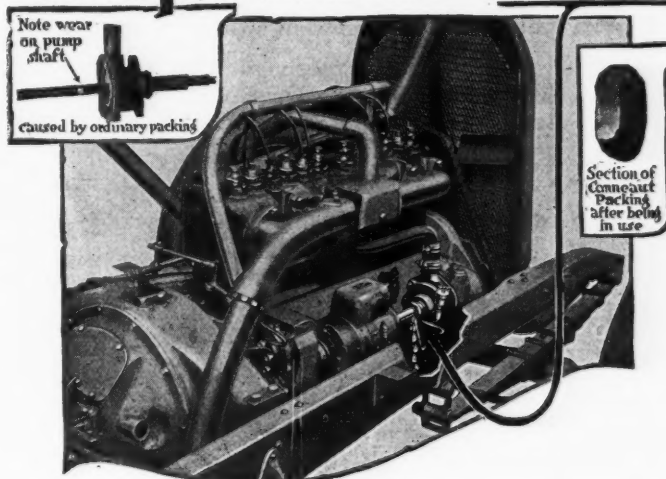
It is practically frictionless — it *seals* the pump shaft and it *stays sealed.*

Service and Garage Managers—by all means get a trial can from your jobbers.

You'll say it's one of the best things you ever did. If you do not find it at your Jobbers, write us direct.

**THE CONNEAUT PACKING CO.**  
Conneaut, Ohio

## Stop That Leak



Conneaut Plastic Metallic Packing is a semi-metal composition compounded by a special process that produces a non-corrosive, practically frictionless bearing against shafts and is particularly adapted to automobile water pumps.

# "Conneaut"

## Plastic Metallic PUMP PACKING

# How Do You Car Dealers Find Your Prospects?

I HAVE NEVER been a Car Dealer, but I imagine your job is rather a tough one. You get a line on some one Mr. Smith. You would like to sell him one of your cars. You find out however that this Mr. Smith already has a car. You therefore, in addition to selling him on your car, must unsell him on his present car. And then, when you have done all this, you must take that old car off his hands.

And it's pretty hard today to find any Mr. Smith who, if he wants a car at all or can afford to buy a car, is now without a car. In other words, it must be pretty hard to find a prospect to whom you can make a clean-cut sale.

None of these worries are attached to the business of selling Stabilators. The Stabilator Dealer does not have to grope in the dark for prospects. Every man in his community who now owns a motor car is an immediate Stabilator prospect and a good prospect. The purchase of a set of Stabilators represents to any Mr. Smith a relatively small investment. This means a large volume of sales. On top of this, the Stabilator Dealer works on a long discount.

The Stabilator Dealer has, in Stabilators, an article which he can immediately demonstrate is a real help to any and every motorist in his city or community. When you can show a man that you can help him he does not bicker—he buys. The ability to do this means a large volume of sales and low-cost sales.

Stabilator prospects in your community are in daily evidence by the thousands. The business is staring you in the face. You should well consider this matter now that the opportunity may still be yours.

I shall be glad to receive a line from responsible men who would like to consider our Dealership proposition. This applies particularly to our smaller cities.



President

JOHN WARREN WATSON COMPANY  
Twenty-fourth and Locust Streets  
PHILADELPHIA

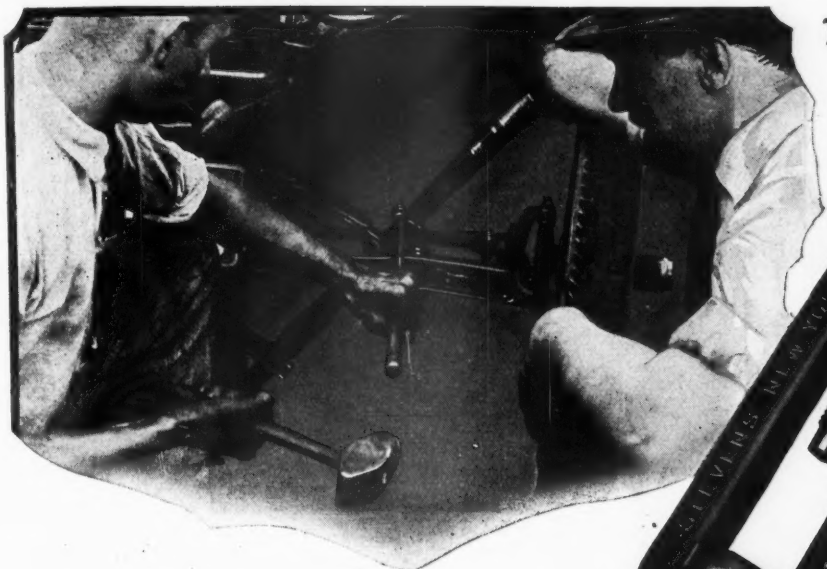


# WATSON STABILATORS

Change the Whole Nature of Your Car







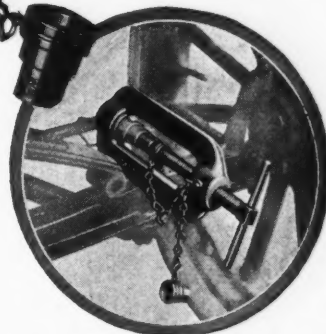
THE OLD TIME-WASTING  
TWO-MAN WAY

THE UP-TO-DATE  
SPEEDY ONE-MAN  
WAY



Stevens Fore-Out T-213 for Spring and  
Perch Bushings. Price \$5.00.

The old bushing is forced out and the  
new one goes in at a single operation,  
by one man.



Stevens Refacer  
No. T-290  
Self Feed Cutter  
and Screwlock  
Handle.  
Price \$3.50  
A quick and ac-  
curate method of  
refacing Ford  
Steering Body  
Bushings.  
Has automatic  
feeder and pilot.

**S**

## pecial Tools to Increase Profits on Ford Front Axle Work

With the flat rate system growing in favor every day, no shop can afford to have its men tinkering around with hammer and cold chisel—spending hours on a job that could be turned out in a short time.

The Ford factory couldn't build a Ford front axle—or any other Ford part—without special machinery for speed and precision. And you can't do quick, accurate repair work unless you have tools built for the job.

Here are shown several of the group of Stevens Speed-Up Tools designed especially for Ford front axle work. These tools do their job in a fraction of the time ordinarily required. And when the job's done, it's done right.

With these special tools quick action is the word. Accurate work. Valuable hours saved. More work accomplished in a day. More profits for you!

Many new tools have just been added to the "Speed-Up" line. They're ready to pitch into your work. Get acquainted.

*"Thru your jobber—his service is economy."*

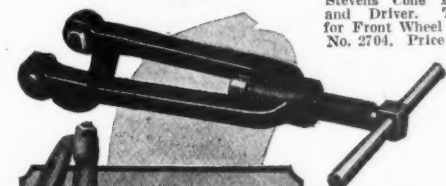
Write today for new catalog showing all the new tools in large action pictures.

### STEVENS & COMPANY

Toolsmiths since 1899

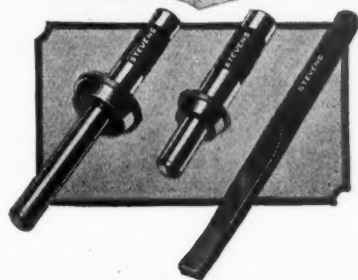
375 Broadway

New York



Stevens Cone Punch  
and Driver. T-212  
for Front Wheel Cone  
No. 2704. Price \$6.50

Takes off old cones  
and puts on new ones  
without dismantling  
spindles. Perfect  
alignment assured.

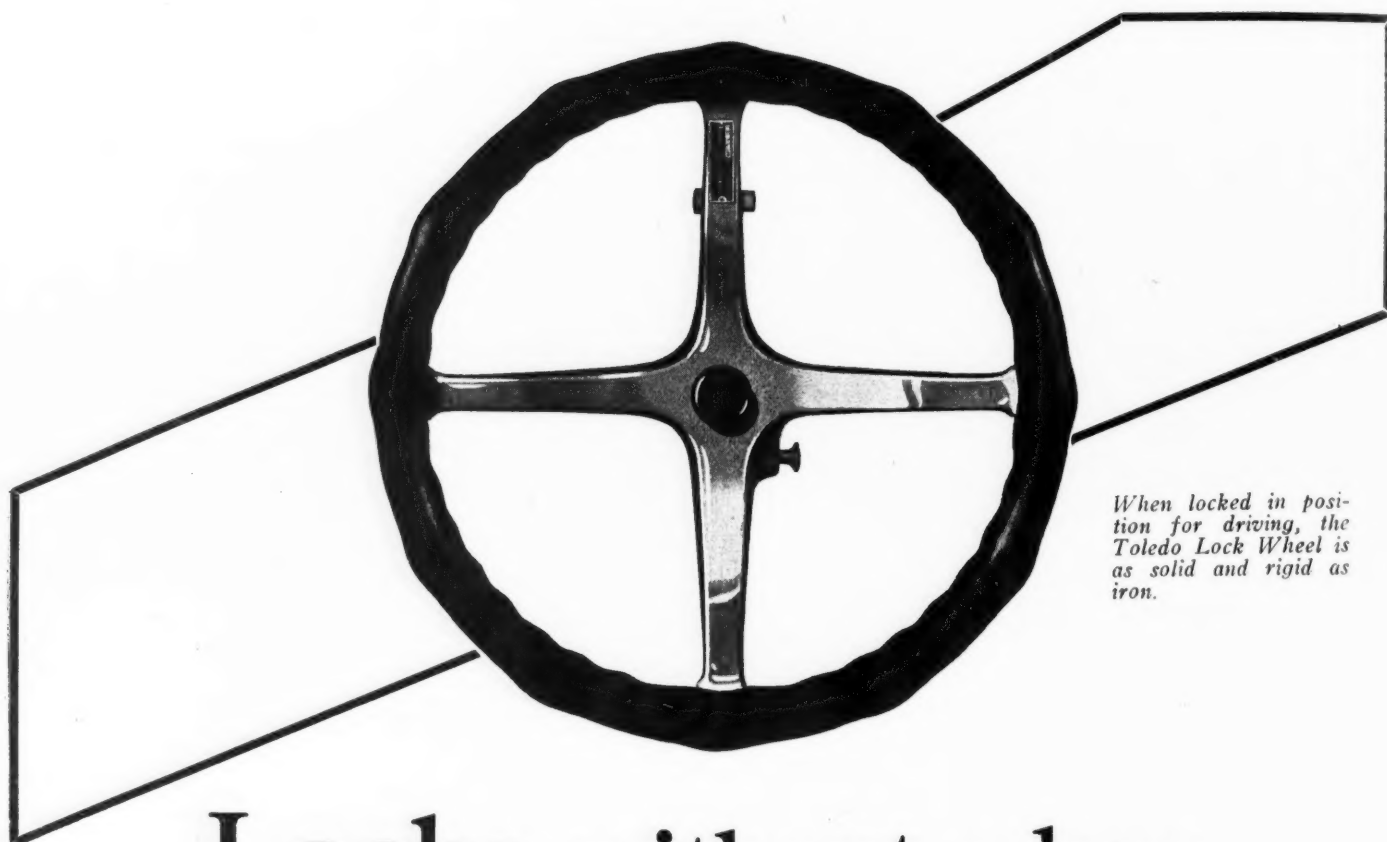


Stevens Roller Bearing Cup Tools. T-222  
for Front wheels. Price \$5.00.  
Driver of punch steel, shaped just right  
to take good bite in confined working  
space. Cup inserters for large and small  
cups, machined to an exact fit, with pilot.

**110  
Special  
Tools  
for  
FORD**



# Stevens SPEED UP Tools



## Locks without a key

Specially designed for the busy man. Simply turn point of lock trigger over key hole—pull outward—and car is made secure.

No key to leave behind for theft to use.

Further—you cannot lock this wheel if the key, used to unlock it, is left in the key hole—there's nothing to forget.

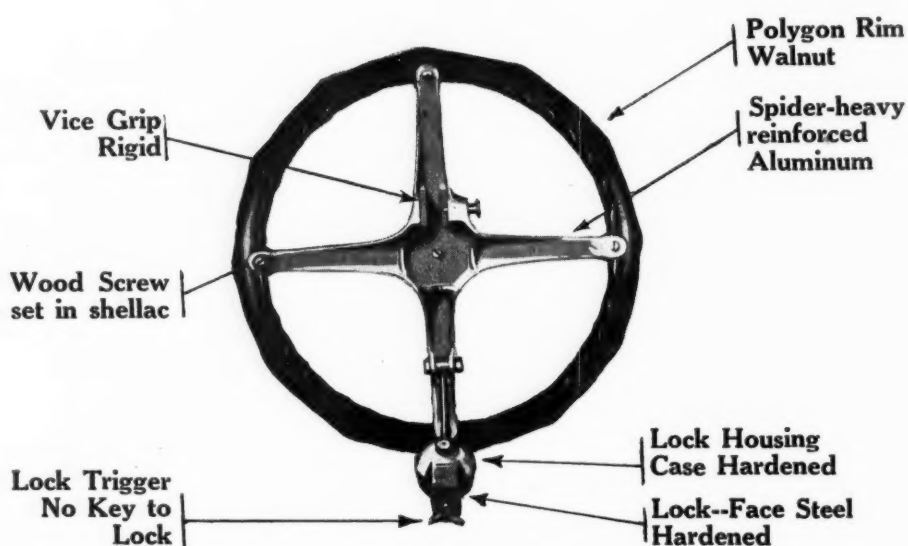
The lock device is housed in case hardened steel—all parts work as smoothly as a watch. Face of lock barrel is of case hardened steel which meets all requirements of Insurance Underwriters. Installed in ten minutes by anyone, and pays for itself in reduced insurance rate.

Guaranteed to work accurately and to be free from imperfections.

It's a big seller in a big market. All popular priced cars.

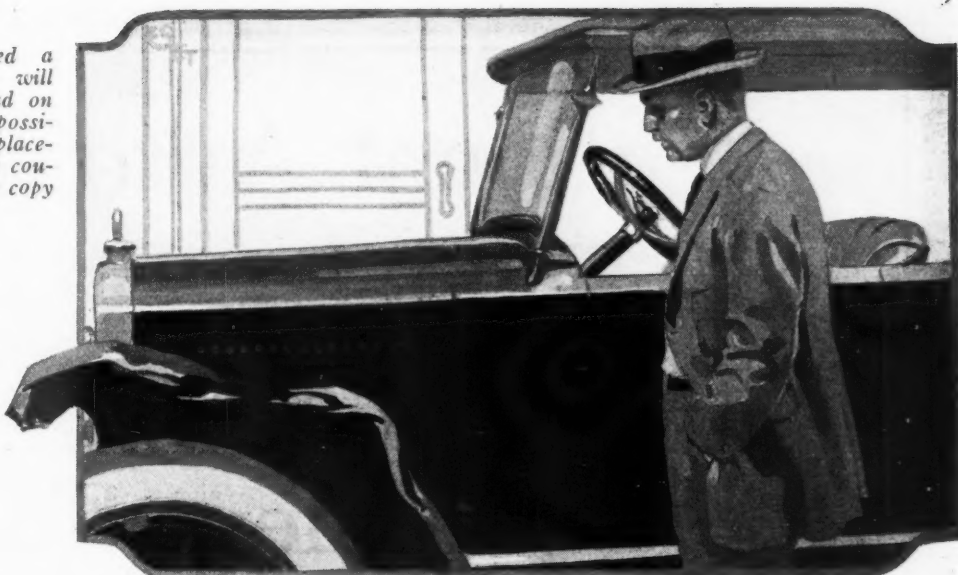
**The Toledo Mfg. Co.**  
Factories Bldg., Toledo, Ohio

Toledo Lock Wheel requires no key—except for unlocking.



# THE TOLEDO WHEEL

We have prepared a booklet that you will surely want to read on the money-making possibilities in fender replacement. Send in the coupon below for your copy TODAY.



Now—

## Fender Replacement Offers Big New Opportunities for Profit

**N**ATIONAL distribution of Fostoria Fenders through special factory representatives situated in all parts of the country, and carrying ample, complete stocks, opens the way for the service shop to a new and most attractive profit.

Wherever you are, you can get a new Fostoria Fender without delay, and at a price that enables you to cash in to the fullest extent on the tremendous possibilities of the fender replacement market.

Fostoria Fenders are easily attached by anybody. No spe-

cial tools are needed. The low price provides a handsome profit for you and tickles the car owner.

Pride in ownership compels the motorist to invest money in fender repair and replacement. You can put on a new Fostoria Fender quicker, for less money, and at a better profit than you can straighten a bent fender.

### OPEN DEALERSHIPS

Distributors of Fostoria Fenders are making big profits in constantly increasing volume. Many good territories are still open to dealers and sub-dealers. Yours may be one. Write for our proposition.

Write for free booklet, the names of your nearest distributors, and complete data. Get your share of this big new sales opportunity.



### FACTS ABOUT FOSTORIA FENDERS

In weight, quality, design and finish Fostoria replacement fenders are equal to or better than original equipment.

Every Fostoria Fender is carefully jigged after assembly. Perfect fit is guaranteed.

Fostoria Fenders are made in the largest factory in the world devoted exclusively to replacement fender production.

Look for name of your nearest distributor in the Chilton Automobile Directory.

Use this coupon for our booklet on the profits in fender replacement.

Fostoria Pressed Steel Co., Department B, Fostoria, Ohio



Fostoria fenders are made for replacement on Allen, Buick, Chevrolet, Cadillac, Chandler, Cleveland, Dort, Essex, Hupmobile, Jordan, Nash, Oldsmobile, Studebaker passenger cars, White trucks and Yellow cabs.

New makes and models are being constantly added.

FOSTORIA PRESSED STEEL CO.,  
Department B, Fostoria, Ohio

Please send me your free booklet on fender replacement and full information about the sales possibilities of Fostoria Fenders and send me the name of the nearest distributor in my territory.

Name \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_

*Replace with*  
**FOSTORIA FENDERS**



# National Automotive Service Convention *and* Automotive Maintenance Equipment Show

*Detroit, May 19-22*  
*General Motors Building*

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## LIST OF EXHIBITORS

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Albertson & Co., Inc.  
Allen Electric Mfg. Co.  
Allyne-Zerk Co.  
American Sales Book Co., Ltd.  
Auto-Hone Co., Inc.  
Automotive Elec. Service Assn.  
Automotive Maintenance Machinery Co.  
Automotive Merchandising  
Avey Drilling Machine Co.  
Bassick Alemite Service Corp.  
Bastian-Blessing Co.  
Battery Equipment & Supply Co.  
Berger Mfg. Co.  
Black & Decker Mfg. Co.  
Bonney Forge & Tool Works  
Brunner Mfg. Co.  
Canedy-Otto Mfg. Co.  
Champion Pneumatic Mch. Co.  
Chilton Co.  
Class Journal Co.  
Cleveland Twist Drill Co.  
Clipper Belt Lacer Co.  
Comfort Printing Spec. Co.  
Crane Puller Co.  
Crescent Tool Co.  
Curtis Pneumatic Mch. Co.  
Dearborn Equipment Co.  
Durand Steel Locker Co.  
Eastern Machine Screw Corp.  
J. H. Faw Co.  
Fleming Machine Co.  
Forest Electric Co.  
Foster-Johnson Reamer Co.

Gaylord Manufacturing Co.  
Gibb Instrument Co.  
Gisholt Machine Co.  
Globe Register Co.  
Greb Company  
Grinder Sales Co.  
Hall Cylinder Hone Co.  
Hansen Manufacturing Co.  
Hemph-Cooper Manufacturing Co.  
Hercules Products Co.  
Hinckley-Myers Co.  
Ernest Holmes Co.  
Hoe Corp.  
Husky Wrench Co.  
Geo. L. Hunt Manufacturing Co.  
K. D. Mfg. Co.  
Kellogg Manufacturing Co.  
Kent-Moore Organization  
Laminated Shim Co., Inc.  
Louisville Electric Mfg. Co.  
David Lupton's Sons Co.  
McQuay-Norris Manufacturing Co.  
Manley Manufacturing Co.  
Mann & Briggs Manufacturing Co.  
Manufacturers Sales Co.  
Manufacturing Equipment & Eng. Co.  
Marshall Electric Co.  
Monogram Lens Co.  
Motor Service  
Naperville Machine Co., Inc.  
National Standard Co.  
North Bros. Manufacturing Co.  
Northeast Service, Inc.

Northwestern Chemical Co.  
Tinius Olsen Testing Machine Co.  
Precision Truing Machine & Tool Co.  
Quik Suds Soap Co.  
Raybestos Co.  
Sheldon Machine Co.  
Snap-On Wrench Co.  
Society of Automotive Engineers  
Speed-O-Multiple Valve Lifter Corp.  
L. S. Starrett Co.  
Stevens & Co.  
Storm Manufacturing Co.  
Surface Combustion Co.  
Taft-Pierce Manufacturing Co.  
Timken Roller Bearing Service & Sales Co.  
United Motors Service, Inc.  
United States Air Compt. Co.  
United States Electrical Tool Co.  
Universal Tool Co.  
Van Norman Machine Tool Co.  
Vellumoid Co.  
Vlcek Tool Co.  
W. A. Manufacturing & Sales Co.  
Walden-Worcester, Inc.  
Wall Pump & Compressor Co.  
Wayne Tool Manufacturing Co.  
Weaver Manufacturing Co.  
Joseph Weidenhoff  
Yellow Jack-It Mfg. Co.  
K. R. Wilson  
X Laboratories

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Every automobile dealer, every service manager, every garageman and every independent repairman in the country is invited to attend this Convention and Show. The program has been prepared to interest those whose business is automotive service. The exhibitors at the show will have their equipment in actual operation under shop conditions, machinery running and actually doing the work. The foremost men in the service business are coming. Season show tickets and delegates' credentials may be obtained from

*National Automobile Chamber of Commerce, 366 Madison Ave., New York City, or any of the co-operating associations—Society of Automotive Engineers, Motor and Accessory Manufacturers' Association, National Automobile Dealers' Association, Automotive Equipment Association, Service Equipment Associates*

# GATES HOSE

*"The Standardized Radiator Hose"*



Marked by Inches  
Easily Cut to Length

The yardstick printed  
on Gates Vulco Hose  
is saving time for more  
than 90,000 dealers  
all over the U. S.

Made by the World's Largest  
Manufacturers of Fan Belts.

# Add these three ! to your accessory line !



## Welco Ford Foot Accelerator

Works independent of hand throttle. Easy to install—only one hole to drill in floorboard. Adjustable to any desired idling speed. Substantially constructed and full nickel-plated. Packed completely assembled in attractive carton with full instructions and diagram for installation. Counter demonstration board furnished.

**PRICE \$1.50**



**PRICE \$1.00**

## Welco "Glare-Stop" Shield

Fits on inside of windshield to any desired line of vision. Two fast gripping rubber suction cups hold it securely. Shade made from deep green Viscoloid. Swings up or down to any angle. Metal parts non-rusting. Packed in attractive carton with complete instructions for use.

HERE are three Welco accessories that will add to your summer profits. The "Glare-Stop" Shield and "Neva-Lost" Gas Tank Cap appeal to every motorist. The Ford Foot Accelerator shows Ford owners the way to easier driving—a feature that adds to motoring pleasure that they'll gladly pay for.

The attractive low prices of these Welco Accessories will increase your accessory sales and give you a substantial profit.



## Welco "Neva-Lost" Gas Tank Cap

Fits permanently to gas tank. Has hinged top that opens or locks with quarter turn of bar handle. Top can't be mislaid or lost. Handsomely nickel-plated. Assortment consists of fifteen caps covering over seventy popular makes of cars including the cars using Bayonet type caps. Packed in individual cartons, showing size number and make of car it fits. New counter display furnished.

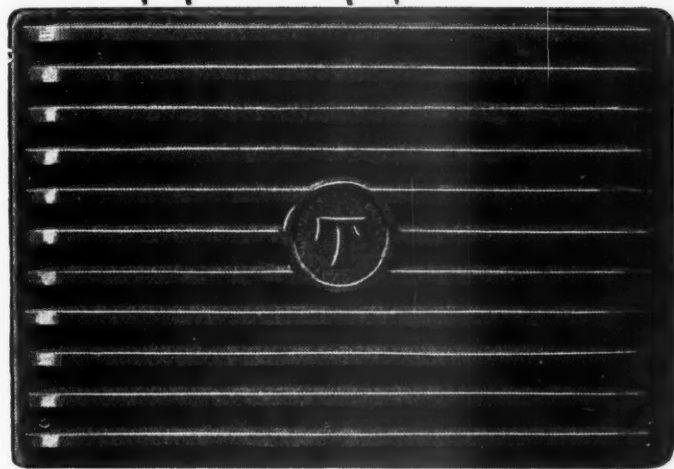
**PRICE \$1.50**

## Ask Your Jobber

TRADE MARK  
**Welker-Hoops Mfg. Co.**  
Middletown, Ct.



# Safety — Economy — Cleanliness



## Trump Running Board Mats

Colors: Black, Gray and Maroon

- Type A—7 $\frac{1}{4}$ x11 $\frac{1}{4}$  Non-Bloom
- Type B—7 $\frac{1}{2}$ x11 Non-Bloom
- Type C—8 x11 $\frac{1}{4}$  Non-Bloom
- Type D—7 x11 Non-Bloom
- Type E—7 $\frac{1}{2}$ x11 Bloom
- Type G—7 $\frac{1}{4}$ x 8 $\frac{3}{8}$  Non-Bloom

*Samples and Prices on Request  
Special Sizes Made on Order*

## and Profit!

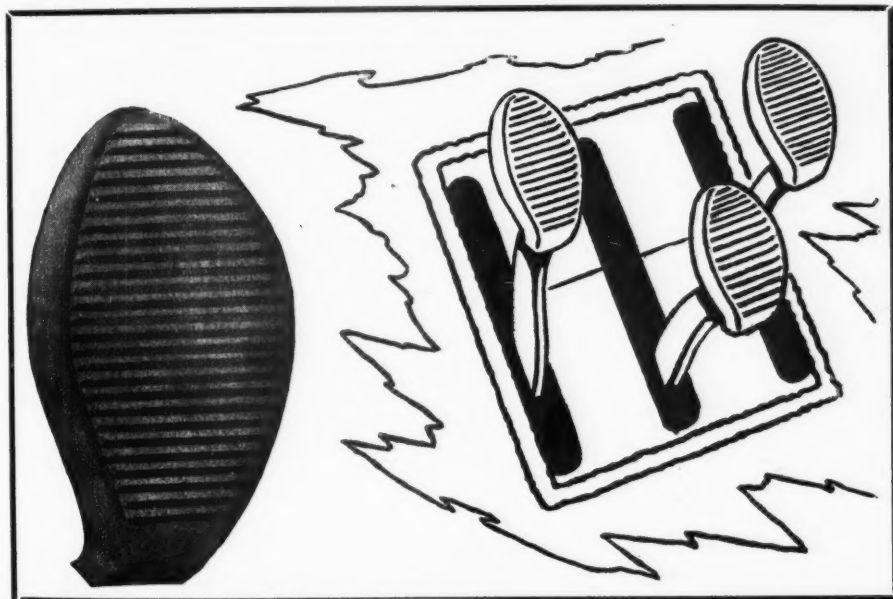
Running board mats for Safety, Cleanliness, and Economy (they save wear on the running boards) — pedal pads for safety — both recognized as necessities by car owners.

## Few sizes mean low prices

By concentrating on the production of but three size running board mats and one size pedal pads (for Fords only) we are able to quote you the very lowest prices. Necessities at a price assure profit!

Year 'round sales mean rapid turnover! If your jobber does not supply you, write us direct.

**Trump Bros. Rubber Co., 1859 E. Market St., Akron, Ohio**



## Ford Pedal Pads

Black only (3 to a set) packed in small cartons—Black only.

Needed by every Ford Driver.

Highest Quality  
Lowest Prices

Samples and Prices  
on Request.



This is  
its size  
*and* price  
**\$4<sup>00</sup>**

## A BACKING LAMP— Too—and a good one

Jacobs Road Lite operates just as efficiently doing service as a backing lamp as it does showing up the front side of the road when used as a safety night driving lamp.

It's strong, clear rays of light bring into bold relief every dangerous turn, obstruction or ditch.

For night driving it is invaluable either for front or rear use.

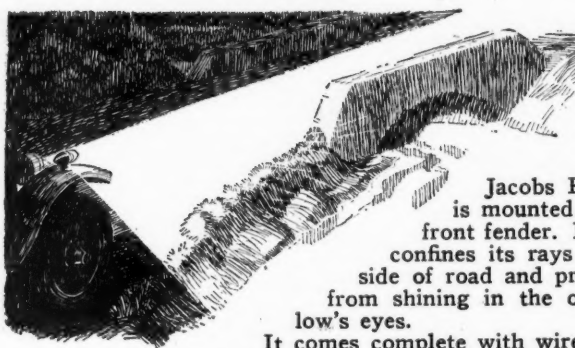
You can secure Jacobs Road Lites from any good jobber or write direct.

**JACOBS AUTO SAFETY LAMP  
CO.**

Blacksburg, Va.



For a backing lamp, simply attach Road Lite to left rear fender. The lighting connections either for front or rear lamp, are independent of car's lighting system. Road Lite is switched on or off from dash at will of driver.



Jacobs Road Lite is mounted on right front fender. Its shield confines its rays to right side of road and prevents it from shining in the other fellow's eyes.

It comes complete with wire, switch, screws, 21 candlepower bulb all ready for use and very easy to install.

# Jacobs Road Lite

*Lights the way to safety*

*The  
Steel  
Bottle  
filled  
with  
power*



*the DOLLAR  
that turns over  
is worth two  
on the shelf*

## *Prest-Air Power Bottle Outfits*

**ACTION!** Telegrams and letters have literally poured into our Sales Department since our opening two-page advertisement in the April 19th Saturday Evening Post.

Showing the public's readiness and the nation-wide dealer response to Prest-Air Power as a fast moving business, free from "slow stocks" and automatically productive of repeat orders without sales effort. Dealers with the highest rating, in all parts of the United States, are stocking with Prest-Air Outfits and getting in on the profits.

Meanwhile we are keeping the public's buying interest keyed up by attractive full-page advertisements, filled with selling power, every four weeks in The Saturday Evening Post—10 million readers. Our order for these pages is placed for a year ahead.

The motoring millions are already beginning to look for the big steel Prest-Air Dealer's Sign—for the famous Power Bottle that—

**Refills  
50¢**

**Repeat Sales**

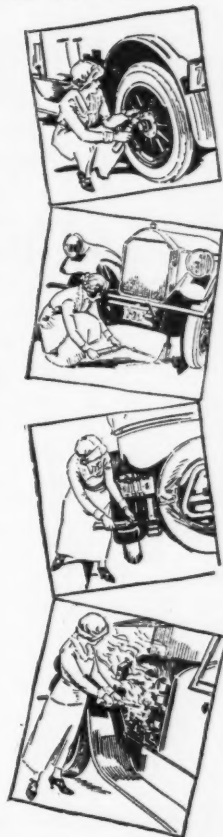
Just hand customer a RE-FILL in exchange for empty bottle and 50c. We supply you with REFILLS in exchange for empties.

<i>inflates tires</i>	} <i>in a jiffy</i>
<i>jacks up cars</i>	
<i>greases cars</i>	
<i>puts out auto fires</i>	
	<i>---with</i>
	<i>clean hands</i>
	<i>and no effort</i>

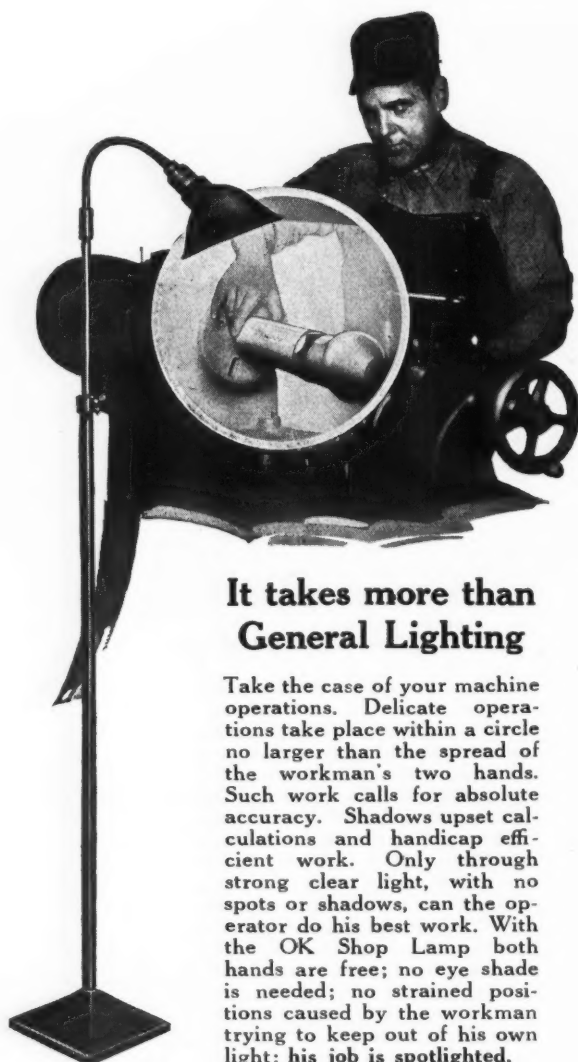
Don't waste time and profits—WRITE TODAY for details.

**PREST-AIR CORPORATION**

General Offices: Grand Central Terminal Bldg., New York







### It takes more than General Lighting

Take the case of your machine operations. Delicate operations take place within a circle no larger than the spread of the workman's two hands. Such work calls for absolute accuracy. Shadows upset calculations and handicap efficient work. Only through strong clear light, with no spots or shadows, can the operator do his best work. With the OK Shop Lamp both hands are free; no eye shade is needed; no strained positions caused by the workman trying to keep out of his own light; his job is spotlighted.

## PORTABLE, ADJUSTABLE LIGHTING that HITS THE SPOT

**R**EPAIR costs are composed of four items: Time, Labor, Material and Overhead. Correct lighting **saves on all four**. Fumbling wastes time and leads to careless work and accidents. Inadequate lighting is a dead-weight on productive effort.

The OK Shop Lamp puts a spot light on the job—right at the point where it is needed.

It saves time—because it enables greater speed. It saves labor—because it cuts out lost motion. It saves material—because it cuts down spoilage. It saves overhead—because it saves much supervision.

The OK Shop Lamp is portable. It can be instantly adjusted to any position and any height up to seven feet. With its square base it can be laid on the floor under the car, affording correct light on any part of the chassis. It holds its position—leaving both hands free for the job.

## *Faster, more accurate work* **INCREASED PRODUCTION**

Work lighted by the O K Shop Lamp is faster and more accurate. It's correct light kills the tendency to stall; makes work easier and more pleasant; reduces accident hazards; lessens eye-strain; decreases spoilage and come-backs because of poor workmanship. The O K Shop Lamp is a money-maker and a money-saver for any shop. Get to the bottom of profit building. Let us tell you the complete details of our generous **TEN-DAY-ON-THE-JOB TRIAL OFFER**, no obligation—write today.

*Lighting Division*

**The Swivel Joint & Shaft Co.**  
PLYMOUTH, INDIANA

# A glance, now, and Ford Owners know instantly their gas supply—

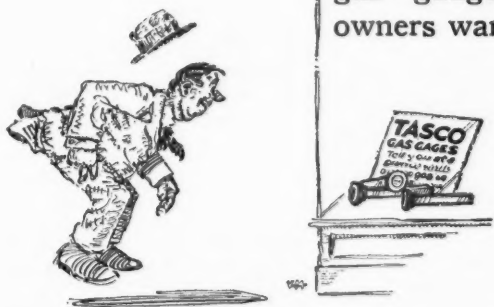
*Profit by this improvement*



RETAIL  
**\$1.25**

If you have ever owned a Ford, you know the trouble Tasco Gauges eliminate. Replacing the old tank cap with a Tasco, the Ford owner "just lifts the seat and looks." Instantly he knows the exact amount of gas in his tank.

Simplicity, sturdy construction and low price—these points make Tasco just the gas gauge Ford owners want.

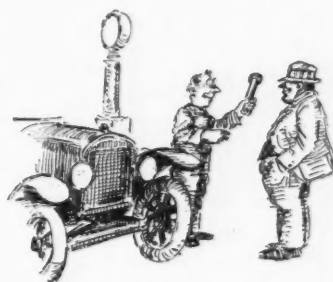


Chevrolet owners, by replacing their old cap with a Tasco gauge, can know their gas supply at a glance.

Stock Tasco Gauges and place them in your window where owners may see them

and snap them up. The profits they pay will warrant the space.

*Sell them at the pump!* That replacing the old cap feature will make it easy. When a Ford or Chevrolet owner drives up for gas or oil have a



Tasco handy. Point out its convenience and show the owner how it works. Nine times out of ten you will make a sale.

Write for the liberal Tasco discounts today and ask your jobber if he has Tascos in stock. When writing please mention your jobber's name.

THE AKRON-SELLE COMPANY

Akron, Ohio

"40 years in business"

## TASCO GAS GAUGES

FORD and CHEVROLET



# Why the "Original Auto-Hone"?



Type A—\$85.00 for cylinders 2 13/16 in. to 3 3/4 in. bore.  
Type B— 95.00 for cylinders 3 1/2 in. to 4 1/2 in. bore.  
Type C— 90.00 for cylinders 3 3/4 in. to 3 7/8 in. bore.  
Type D—100.00 for cylinders 4 1/2 in. to 5 1/2 in. bore.

The Auto-Hone Co.  
1137-39 Main St., Buffalo, N. Y.

Because it is built for wear and tear—hard daily usage—stands up under accidental abuse—dirt can't get into its working parts inside its **CLOSED TYPE CYLINDER** to put its moving parts out of commission.

Because the original Auto-Hone is the only adjustable **DRY** operating cylinder grinder on the market—

Because it is a compact, sturdy, reliable tool made for a lasting service **AND IT GIVES THAT SERVICE.**

Grind those cylinders with an Auto-Hone—do a better, quicker job—give greater satisfaction and get bigger profits.

The original Auto-Hone—the best hone for the work!

At all good jobbers or write direct.

**We also offer you—**

The "HaLee Crankpin Re-Turning Tool,"  
The "Akurac Bearing Boring Fixture,"  
Circulars for the asking.

*These tools will be displayed and demonstrated in Space 71  
at the Maintenance Equipment Show at Detroit May 19 to 23*



# Air-power and profits!

A Brunner Air Compressor not only can serve you out in front rushing cool, clean air into motorists' tires—it can also serve you back in the shop where its surplus of air-power can be turned into profits.

In modern shops compressed air is being used for a score of painting, spraying and cleaning jobs which are better and more quickly handled in this manner than in any other way.

And a Brunner Compressor is fully capable of assuming this double duty. Built like a fine engine with all parts of finest quality and painstakingly ground and fitted together—it is not to be wondered at that an equipment of such high quality has an overplus of capacity for work—that it starts quickly, works fast, runs smoothly without vibration, costs little to operate, is super-safe and gives years of trouble free service.

## BRUNNER MANUFACTURING COMPANY

Utica

New York

*Oldest and largest manufacturers of garage air compressors  
in the world.*

Cincinnati, O.; Kansas City, Mo.; San Francisco, Cal.;  
Export Office—Utica



### BRUNNER MODEL 932 Assembled Unit

*Largely self operating—includes a remarkable unloader—controller which maintains desired tank pressure, at same time relieving motor of starting load.*

*Has Brunner doubly adjustable belt tightener, patented non-pounding Brunner check valve, and double tested Brunner tank guaranteed for working air pressure of 175 lbs. per sq. in. Noiseless—vibrationless—good for 20 years at hard labor.*

## USE AIR

**for painting and  
retouching fenders**

Through accidents or abusive treatment fenders often need repainting or touching up. This can best be done with compressed air using the Brunner Paint Sprayer and Cleaner. A sprayed job is a quick job, a workmanlike job and one in which a better match with the original finish is possible. All parts of the car can be better repainted with air—for which profitable charges can be made.



**AIR PROFITS**

**FREE**

Write for your copy of "AIR PROFITS" which describes the added uses of air and catalogues the Brunner Line of Compressors.

## TWENTIETH CENTURY

AIR COMPRESSOR

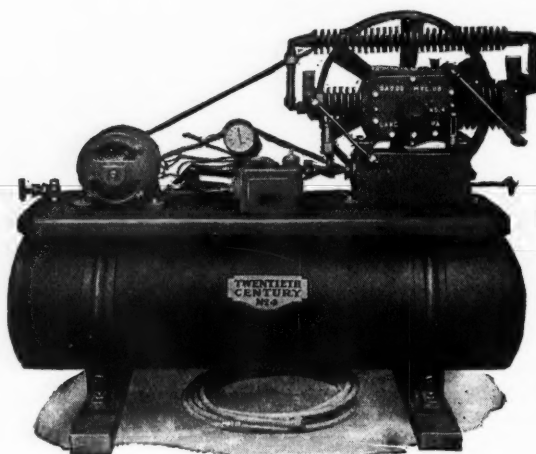
# Dependable Air Service

Let us MANUFACTURE and SERVE your "Free Air." We will do it with the least possible expense to you and in the most modern and efficient way. The design, material and workmanship on our products are of the best, assuring long life and uninterrupted service.

*Catalog showing full line  
mailed on request.*



Patent applied for  
Height 5½ ft. Ex-  
tracts 22 ft. of hose.



No. 4 Model. Delivers 4 cu. ft.  
per minute.



Patent applied for  
Height less sign 7 ft.  
6 in. Extracts  
22 ft. Hose

## GASCO MANUFACTURING COMPANY

General Sales Office  
25 Church Street, Room 912, N. Y. C.

Plant Located at  
Lancaster, Penna.



# So easy!

## ONE WHEEL PULLER FOR ALL CARS

Screw the C. & G. Wheel Puller on the hub—apply the pressure—off it comes easily and quickly without stripping of any threads or strain on any part of wheel or brake drum.

The harder you pull—the tighter the grip which is evenly distributed over entire surface of hub.

No chance to hurt anything. A speedy—handy—efficient tool needed by every Garage and Service station.

Only \$12.00 ready to work. Adapters \$2.00 each. Get complete details at once. We'll send them immediately on request.

A big spring seller.

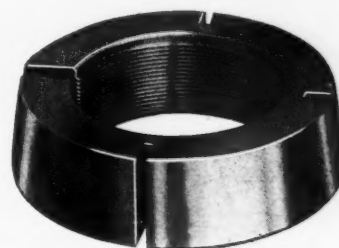
Fully guaranteed and sold on a money back guarantee. If jobber does not handle write direct.

**The C. & G. Wheel Puller Co., Inc.**  
Wellsville, New York



The beveled adapter is flexible and fits to hub—it automatically shrinks to place as pressure is applied.

Adapters are interchangeable in the puller. About twelve adapters take in nearly all cars and trucks.



### Adapters \$2.00 each, for all cars as follows:

<b>Adapter No. 1</b> Chalmers Columbia Dorris, 1922 Essex, 1924 Hudson, 6-40 Hudson Super-Six Jewett before 1924 Jordan, big six Liberty Moon, model 6-40, 1922, 1923, 1924 Moon, Model 6-50, 1923, 1924 Paige, model 6-66, 6-70 Peerless Premier Standard 8 Saxon Duplex Stephens salient six 1922, 1923	Stutz model 695, 6 cyl- inder Westcott <b>Adapter No. 2</b> Buick, 1917, D 34, D 35 Buick, 1918, E 34, E 35 Case, 1915, 1916 Franklin Oakland, 1917, 1918, 1919 Overland, models 20A, 27, 64, 67 Scripps Booth, 1917, 1918, 1919 Studebaker Light Six, 1924 <b>Adapter No. 3</b> Davis, models, 63, 65, 71 Olds	Jewett 1924 Overland, models 4, 90, 92 Overland Red Bird Studebaker Light Six, before 1924 <b>Adapter No. 4</b> Oakland, 1920, 1921, 1922, 1923 Oldsmobile 4 cylinder, 1923 Scripps Booth, 1920, 1921, 1922 <b>Adapter No. 5</b> Buick 4 cylinder, 1923 Davis, before 1923 Dort Essex, before 1924 Jordan models M, MT Kissel Kar, 1923	Metz Master six Moon, 6-58, 1922, 1923, 1924 Packard single six, 1922, 1923, 1924 Packard straight 8, 1923, 1924 Stutz model 660, 4 cylinder Westcott, C 48 Willis Ste. Claire Willys Knight, 20A, 27, 64 <b>Adapter No. 6</b> Apperson, 6 cylinder 1923 Auburn, 1923 Barley six Case, 1922, 1923, 1924 Overland model 20	Rickenbacker Studebaker special 6, before 1924 Studebaker big 6, before 1924 Willys Knight, model 20 Westcott 44 <b>Adapter No. 7</b> Chevrolet 49, 1916, '17, '18, '19, '20, '21, Ford <b>Adapter No. 8</b> Chevrolet superior, 1924 Dorris, 1923 Ford truck Overland, Model 91 <b>Adapter No. 9</b> Chevrolet 490, 1921, 1922	Chevrolet superior, 1923 Star <b>Adapter No. 10</b> Cole Holmes Hupmobile M.R. No. 2 <b>Adapter No. 11</b> Dodge Stearns Knight <b>Adapter No. 12</b> Hupmobile M.R. No. 1 Nash Pierce Arrow, 38 <b>Adapter No. 14</b> Studebaker big six, 1924 Studebaker special six, 1924
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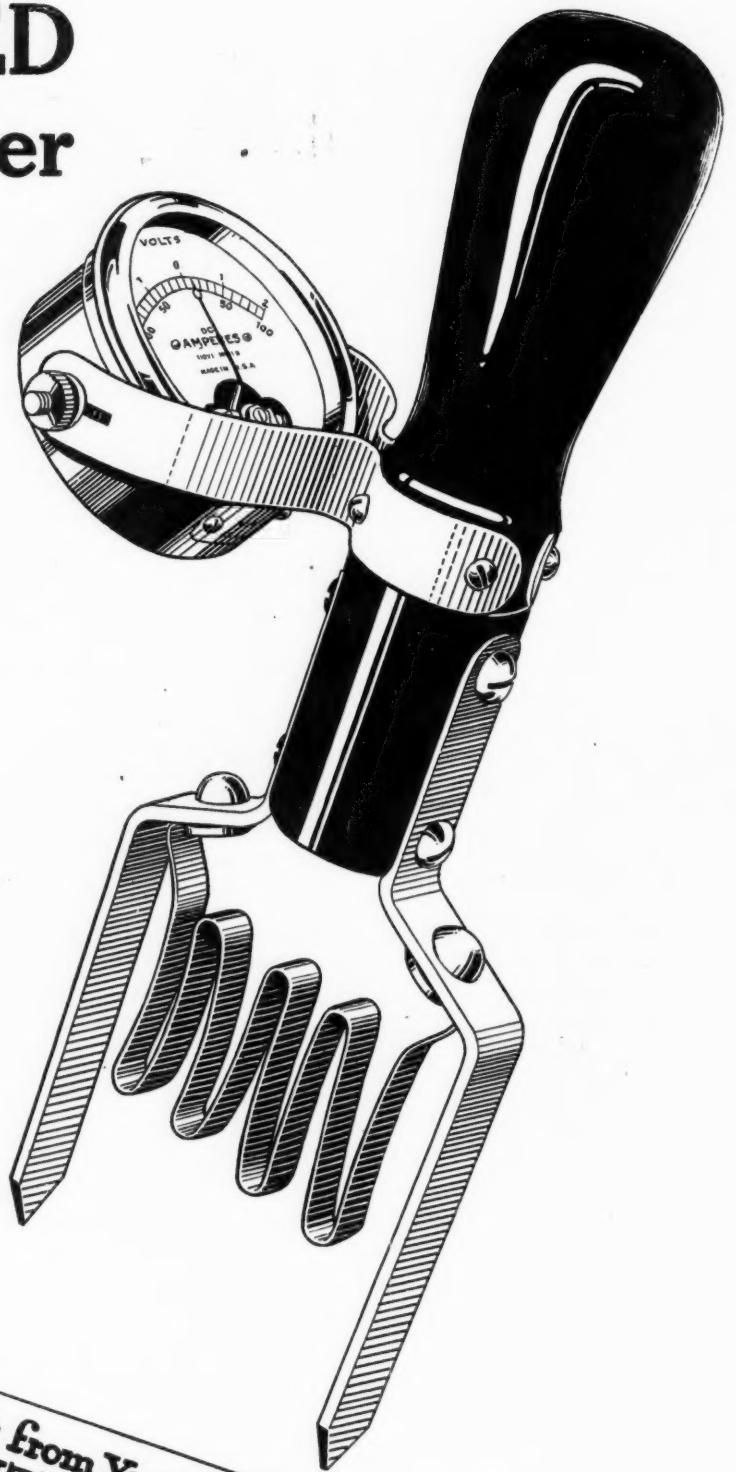


# An IMPROVED Hoyt Cell Tester —still \$11

Compare it point by point.

1. The resistance is a ribbon of special metal of .02 ohm resistance which will not vary with heat.
2. The meter is of the moving coil type, rugged, accurate and by all means most satisfactory for testing work. It reads 50 amperes for every 1 volt drop in the cell.
3. The meter can be removed from the brackets and used as a pocket meter.
4. The brackets holding the meter are so placed as to make it most convenient for reading the meter; not only that, but the meter itself can be revolved to any angle.
5. The prods are of steel—lead-coated so as not to be affected by the acid.
6. The handle is a substantial one and gives excellent support to the prods.

Price \$11.00



**Buy Electrical Equipment from Your Jobber!**  
**—and buy it for WHAT IT WILL DO!**

FREE BOOKLETS—A request on your business letterhead will bring any one or all of the following educational pamphlets:

"Hunting Down Electrical Troubles"

"The Cadmium Test"

"Growler Chart"

"Miho Chart" (showing various battery tests).



## Burton-Rogers Company

Distributors through jobbers Hoyt Electrical Instruments, Miho Battery Equipment, Heyer Chargers and Ignition Testers

26 Brighton Avenue, Boston



# Night-Driving Rules

## *With a Cash-Register Jingle*

1. **D**ON'T blind the other fellow with your headlights.
2. **D**ON'T take your hand off the steering-wheel.
3. **D**ON'T dim your headlights too suddenly.

It's not only blinding headlights that cause so many motor accidents—it's the blinding effect of DIMMING HEADLIGHTS TOO SUDDENLY. In meeting a car, you wish to be courteous, of course. But, the sudden switching of your lights from "full on" to "dim" is too much of a shock for your eyes. It leaves you temporarily blinded JUST WHEN YOU NEED TO SEE THE ROAD AHEAD. No wonder that night accidents are growing in number.

But the Lorentzen Headlight Kontrol does away with this danger. As a car approaches, the touch of your finger pulls the light down GRADUALLY. There are SEVEN intensities of light (see chart). There is no shock to your eyes as you pass the other car. YOU CAN SEE. You have CONTROL. You are SAFE.

A million motorists want the Lorentzen—once you call their attention to it. Put on in ten minutes. Two voltages cover all cars. Sells on sight. Real Dealer proposition. Liberal discounts, real dealer helps. Counter demonstrator. Just say you are interested.

Lorentzen Headlight Kontrol, Inc.  
60 Grand St., New York City



# LORENTZEN

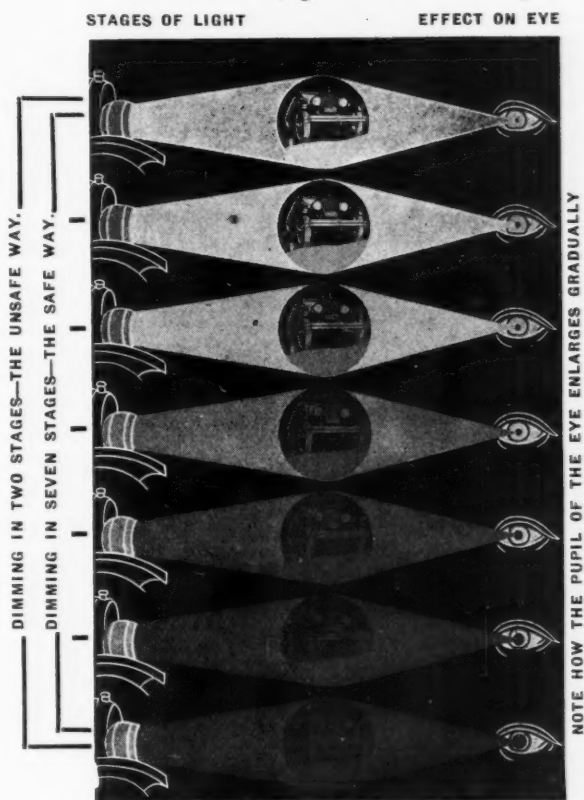
# Headlight Kontrol

(Patents Pending)

*"Makes You Like to Drive at Night"*



Control of Lights  
the only safe way



Copyright, 1924, by Lorentzen Headlight Kontrol, Inc.

Note how the pupil of the eye enlarges as light decreases. Eye cannot adjust itself to instant switching from bright to dim. Gradual dimming, in seven stages, eliminates momentary blindness; you never lose sight of the road.



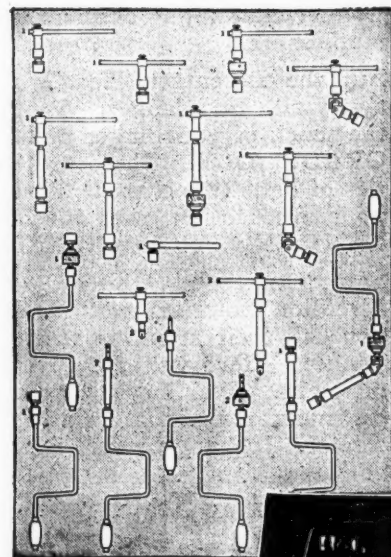
No Reaching for Wrenches

# Service Managers

## “please come to order”

THE first business before this convention is Economic Management. From start to finish of a job, socket wrenches must be in reach. Why not have all your mechanics use the H & G Universal Wrench Set — 140 different combinations in “T”, “L” and Speed Handles, Short or Long Types, with and without Universal Joints and Ratchet.

If you would give quick, accurate service, stop wasting time running for wrenches. You can get over or under any obstacle with an H & G Set. Save time and money. Write for literature and also the handy H & G Key Chain. Both free to Service Managers.



**THE EASTERN MACHINE SCREW CORP.**

10-20 Barclay Street, New Haven, Conn.

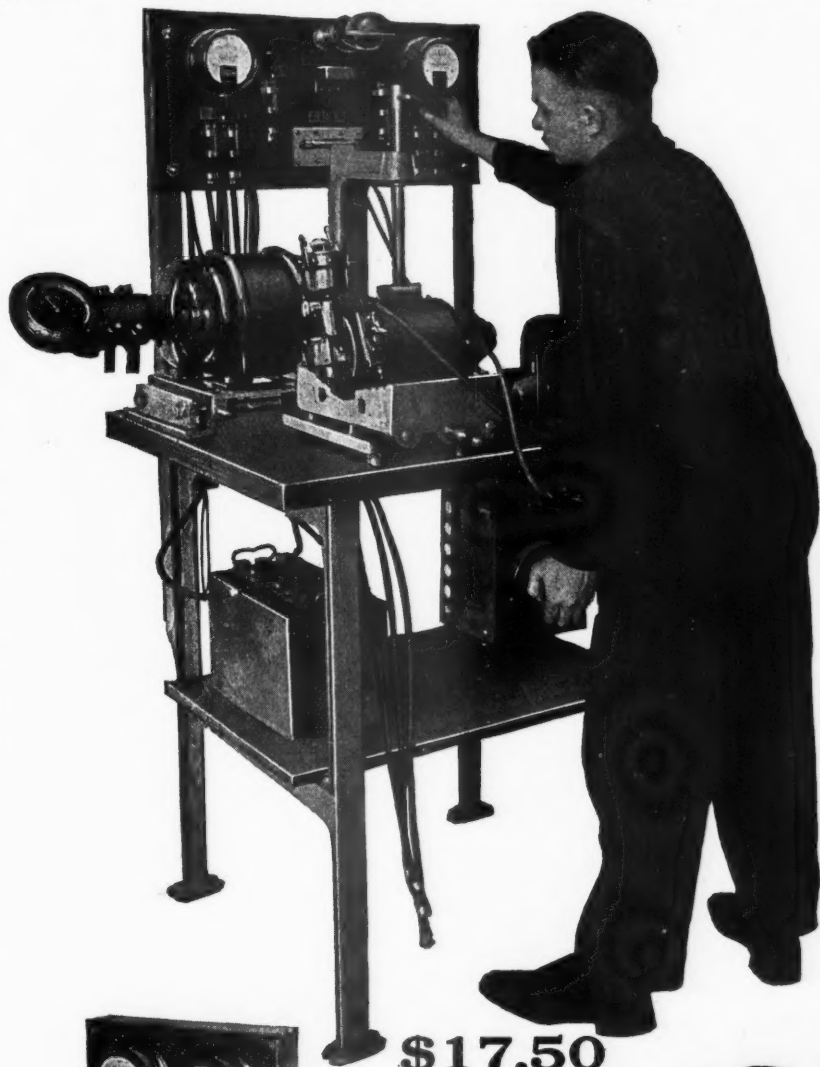
In Canada: Canadian Raybestos Co., Ltd., Peterborough, Ontario



## *The H & G Universal Wrench Set*



# ARE YOU ONE OF THE FELLOWS WHO IS STILL HESITATING?



Many service stations have paid for their test benches in 3 or 4 months out of the extra profit which the benches earned for them and some of these fellows hesitated as long as a year because they were afraid they would not be able to meet the small payments as they came due from month to month.

Our records show that less than two out of every hundred test benches sold have failed to pay their own way while it is generally known that more than 30 out of every hundred stations failed last year because they could not meet competition. Moral: While you are hesitating, others are proving that it can be done.

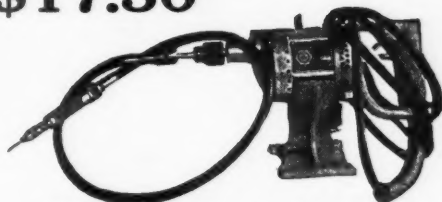
## WEIDENHOFF EXCELSIOR TEST BENCH

*With the positive drive and speed control*

Hundreds of testimonials prove that the low cost, remarkable efficiency, and easy payment plan under which the Excelsior Test Bench is offered have made it possible for battery and general motor service shops to add starting, lighting and ignition service on a very profitable basis.

Complete details of the time payment plan, construction, and operation of the Excelsior Test Bench are given in Bulletin M-975. Write for it today.

**\$17.50**



### Simplex Mica Undercutter

Can be operated from the chuck of an electric drill, drill press, or lathe. With the armature held in the hand, under-cutting is accomplished in a manner as simple as sharpening a pencil. Ball bearing hand piece. Special design shaft and casing give unusual flexibility and long life. Price, \$17.50. Of interest to every service mechanic—We want every mechanic to have a copy of Bulletin M-959 on armature and field coil testing and repairing which we have prepared for free distribution. Write for your copy today.

**\$39.50**

### Ace Battery Tester

Shows the voltage drop of the individual cells while the battery is being discharged. Carbon rheostat adjustable to give any rate of discharge from 0 to 630 amperes. Ebonite asbestos panel. Price, \$39.50.

We Will Exhibit at the  
AUTOMOTIVE MAINTENANCE  
EQUIPMENT SHOW  
DETROIT, MICH.  
May 19 to 23, 1924

# WEIDENHOFF

Member Service Equipment Associates

4358 ROOSEVELT RD.,

CHICAGO, ILL., U. S. A.

"THE BEST EQUIPPED SHOP GETS THE BUSINESS"



**\$49.50**

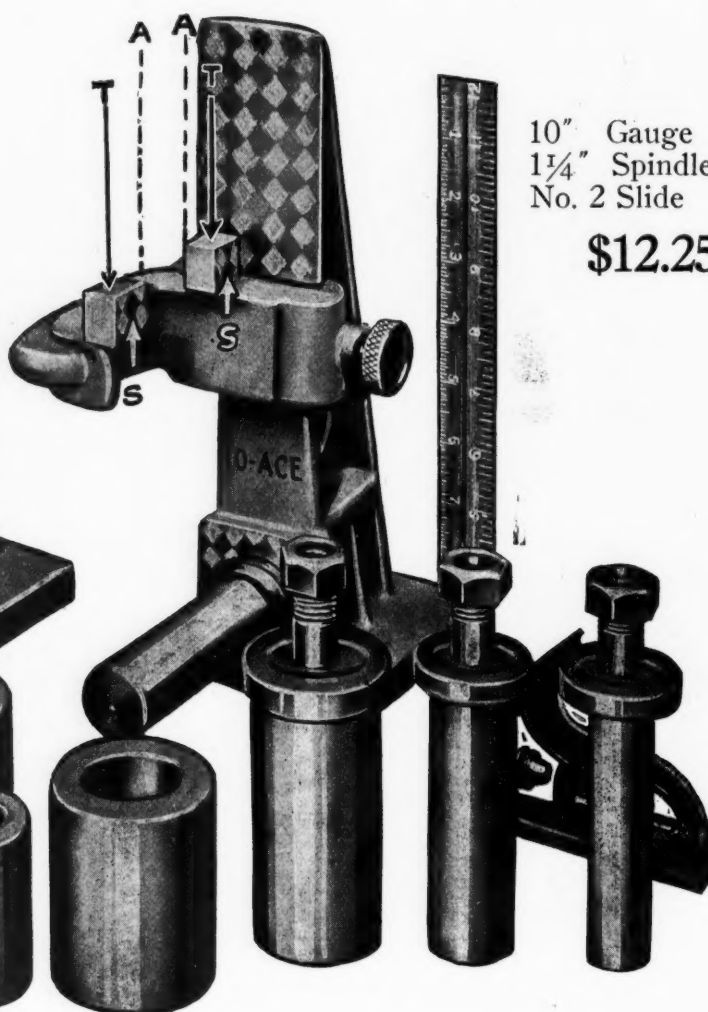
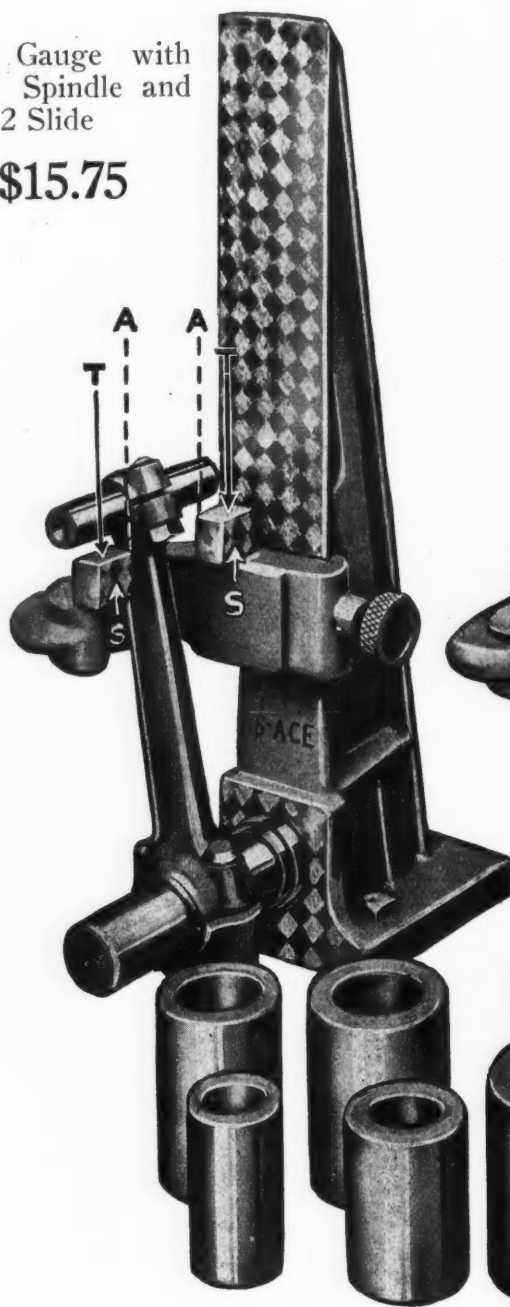
### Off-and-On-Puller-Press

Acclaimed the most efficient tool ever offered for removing and replacing all sizes and types of bearings, races, gears, couplings, slip rings, clutches, end caps, Bendix Drives, and commutators. Table adjustable for height making it equally efficient for pulling or pressing operations with minimum travel of screw. Price, \$49.50.

## ACE Aligning Gauge

16" Gauge with  
1 1/4" Spindle and  
No. 2 Slide

**\$15.75**



10" Gauge with  
1 1/4" Spindle and  
No. 2 Slide

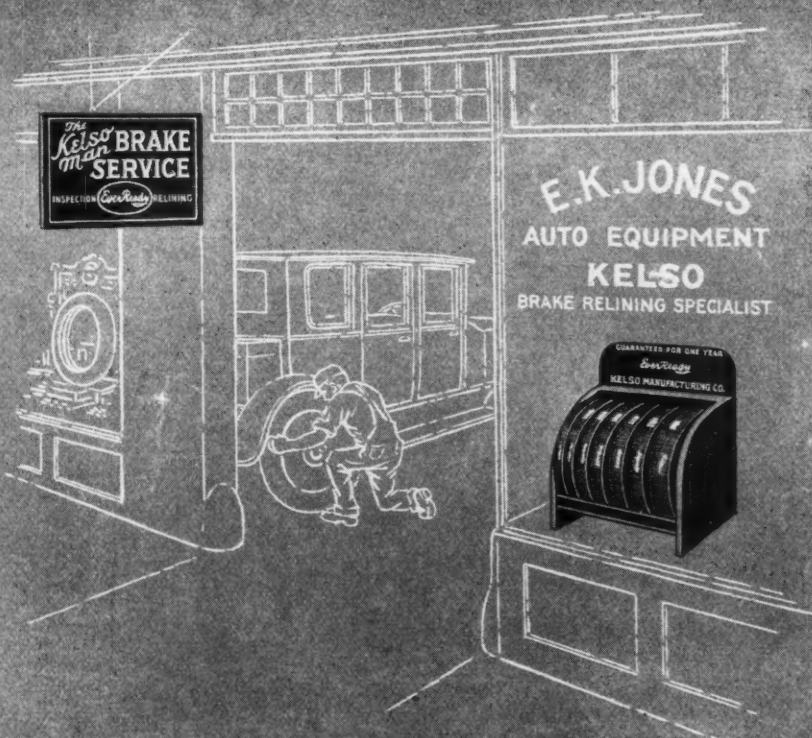
**\$12.25**

### MARK W. JONES

52ND & LANCASTER AVENUE

PHILADELPHIA, PA.





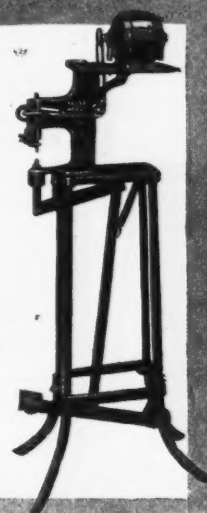
## Kelso Equipment Speeds Brake Relining Jobs

The greater the speed the greater the profits in brake relining and clutch facing jobs. A Kelso equipped shop can reline brakes and renew clutch facings in one-third the time taken by old methods, and do the work far better. This insures satisfactory profits and satisfied customers.

### The Shop With the "Kelso Man" Sign Makes Money—

because the best Brake Linings and Clutch Facings made, now have the best Brake Relining Machine and dealer helps. Ask the Kelso Distributor nearest you, or write direct for "Kelso Man" data.

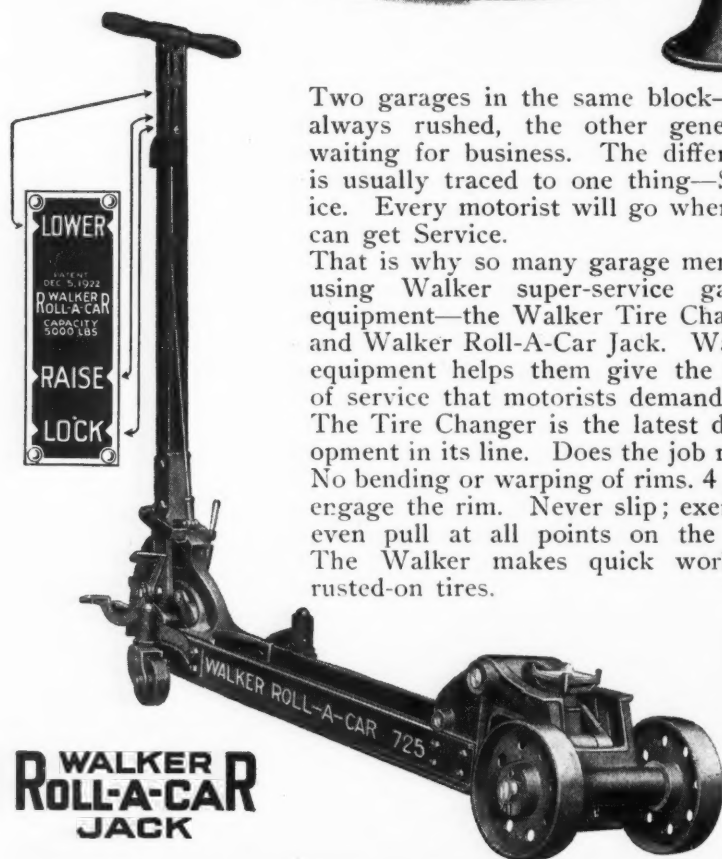
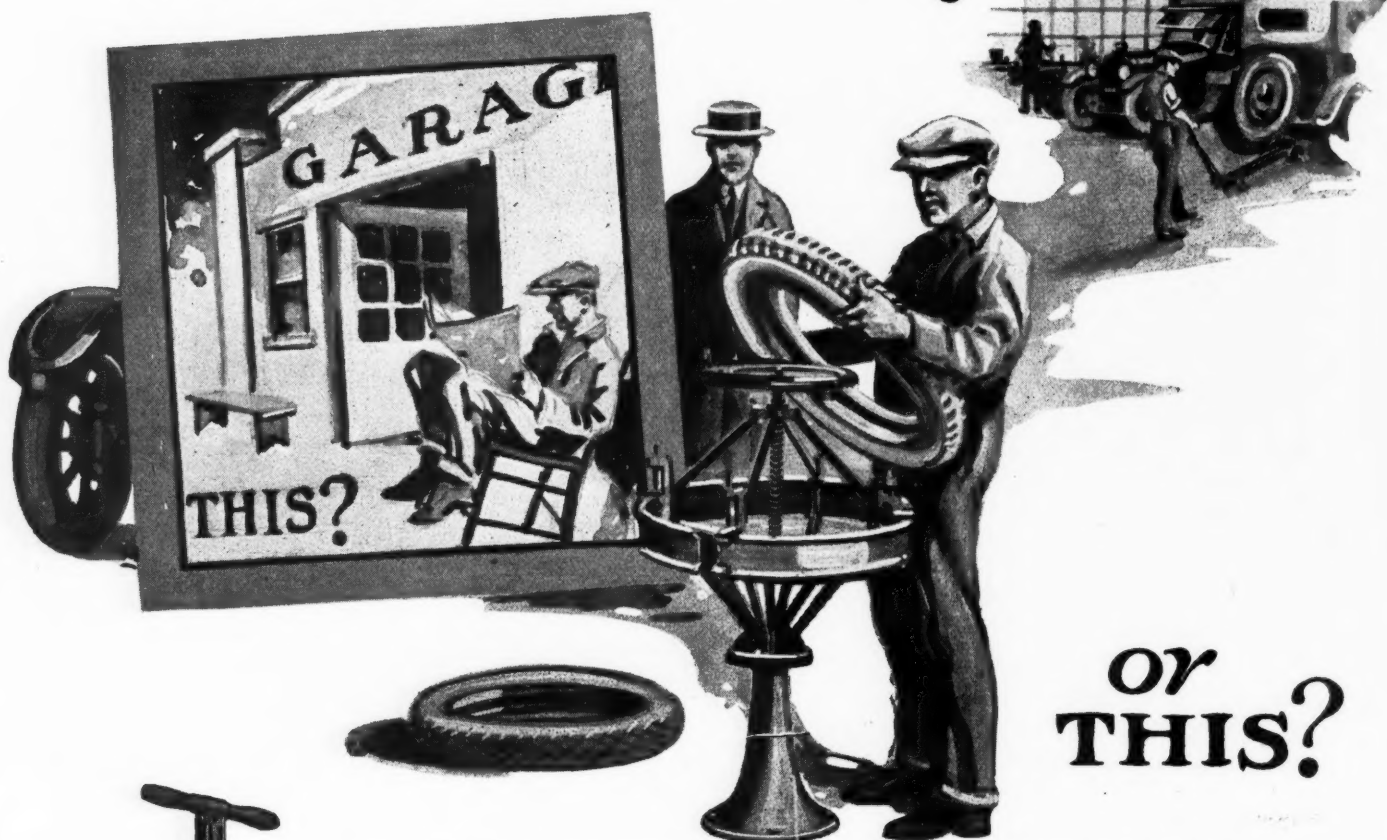
**KELSO MFG. CO.**  
TRENTON, N. J.



*Ever Ready*  
**Kelso BRAKE LINING**  
*& Clutch Facings*



# Two Ways to Run a Garage— WHICH IS YOURS?



Two garages in the same block—one always rushed, the other generally waiting for business. The difference is usually traced to one thing—Service. Every motorist will go where he can get Service.

That is why so many garage men are using Walker super-service garage equipment—the Walker Tire Changer and Walker Roll-A-Car Jack. Walker equipment helps them give the kind of service that motorists demand.

The Tire Changer is the latest development in its line. Does the job right. No bending or warping of rims. 4 jaws engage the rim. Never slip; exert an even pull at all points on the rim. The Walker makes quick work of rusted-on tires.

The Roll-A-Car saves time on many repair jobs. Means better use of garage and shop space. Has many big features—the garage jack for maximum efficiency. The Roll-A-Car is pivoted on the small wheels, swung into position in a jiffy. Lifting cap is raised against the axle by slight touch of the foot pedal. No stooping or reaching under car to adjust cap. 4 short strokes and the car is up, ready to be moved. Handle action is independent of load. Extra long frame reaches under any car. Steers on small wheels only, an important safety factor.

Get the facts about this business-building equipment now and be ready for bigger business this summer. Write your jobber today.

WALKER MANUFACTURING CO.  
RACINE, WIS.

## Walker JACKS

"Dependable in Emergencies"

# PROFIT—OR—LOSS



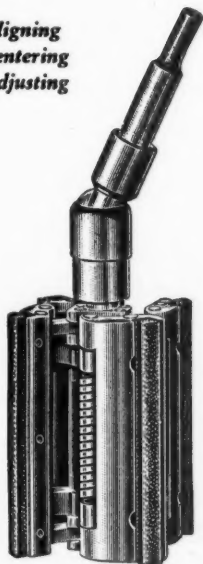
The AMMCO Method



The Old Method

## Keep All The Profits right in your own shop

Self-aligning  
Self-centering  
Self-adjusting



The interconnection and hinging of the wings insures a round and parallel hole. This is a patented feature of the AMMCO. No expert is required to operate it.

**M**OTOR RE-CONDITIONING means big profits to the shop equipped to re-condition cylinder blocks by the rapid and accurate AMMCO method of cylinder re-conditioning. The AMMCO Cylinder Re-Conditioning Tool rapidly and accurately corrects, resizes, and refinishes tapered or out-of-round cylinders, and the surface of the cylinder wall is finished to a glass-like smoothness that makes "wearing-in" unnecessary.

The AMMCO does the job with the cylinder block right in the chassis; any standard 1/2-inch electric drill will do the work; only one tool is required for cylinders up to 5-inch bore. No shop can afford to pass up the profit-making opportunity of motor re-conditioning when a small investment in the AMMCO keeps the whole profit right in your own shop. Be sure to investigate the AMMCO, today. Use the handy coupon!

### Use the AMMCO

Rapidly enlarges bores to fit next  
standard oversize piston diameter

Automotive Maintenance Machinery Co.

551 WEST  
WASHINGTON ST.



Chicago Ill.

Automotive Maintenance  
Machinery Co.  
551 W. Washington St., Chicago

We certainly want to keep all the re-conditioning profits in our own shop. Let us know how the AMMCO does it.

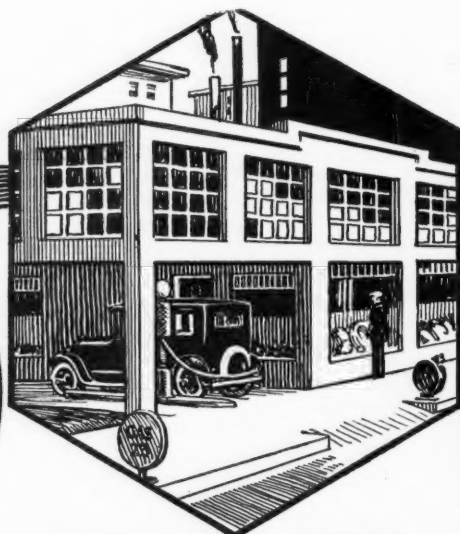
Name .....

Address .....





MAKING PROFITS



BREAKING EVEN



LOSING MONEY

# WHY?

HERE YOU WILL FIND THE REASONS



**M**OTOR AGE has set for itself a definite mission. It is a business paper of the automotive trade and concerns itself with the greater success of those in this tremendous field.

Among other important features, MOTOR AGE brings to its readers the fundamental reasons for success in the automotive trade. It tells why certain types of automotive merchants are successful and why others are not. It gets down to facts and specific reasons. It doesn't preach—it advises. As an influential factor in the progress of the automotive trade, MOTOR AGE has as one of its policies the belief that all of us can profit by the experiences of others. In every issue are found many valuable thoughts that were aroused by some dealer's experience.

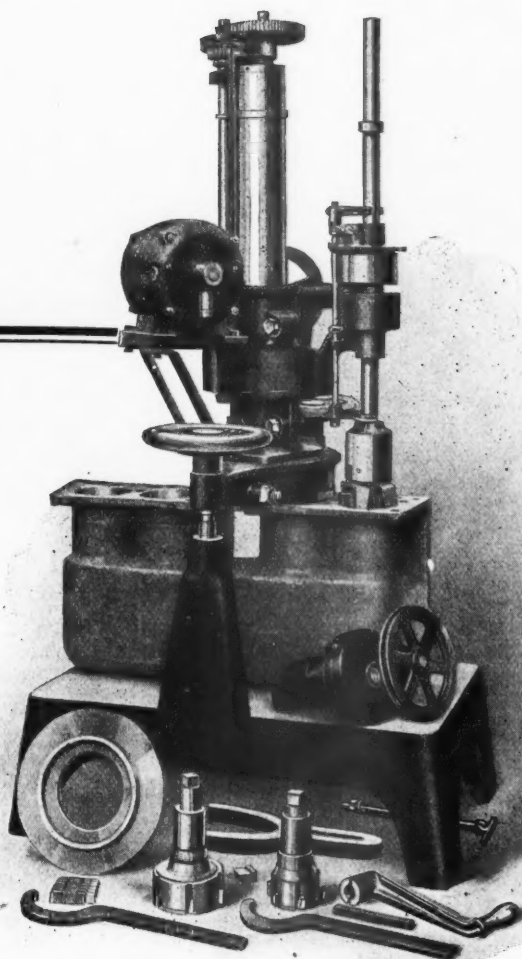
Thousands of leading automotive dealers the world over are thus profiting by these weekly messages.

## MOTOR AGE

5 SO. WABASH AVE.,

CHICAGO, ILL.





Model M.—Semi-portable. Capacity 2½ in. to 6 in. in diameter.

High quality work, efficiently and economically performed is the most important factor in the building up of a permanent and profitable business.

To build up such a business utmost care should be taken in the selection of proper equipment. Only STORMIZING MACHINES can turn out this high quality work.

# Stormizing Machines

## *Bring The Biggest Profits*

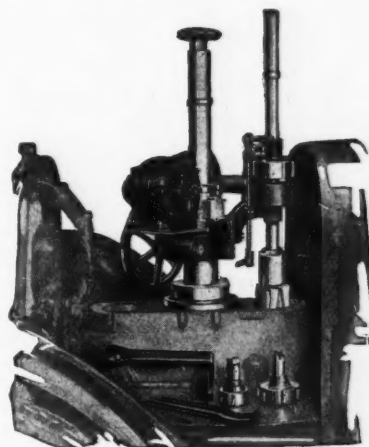
Equip your shop with a STORMIZING MACHINE NOW! Get in on the profits of the cylinder renewing jobs that you are now sending out to other shops, or that you are missing altogether.

The self-centering and automatic features of STORMIZING MACHINES reduce labor costs and overhead to a minimum, leaving a bigger margin of profit on every job and a saving of valuable time.

STORMIZING MACHINES are made in three types to meet varied shop requirements and cost as low as \$190.00.

Write today for your copy of the Storm book "Modern Cylinder Methods". It's FREE.

See Our Exhibit At The Automotive Equipment Show  
At Detroit—May 19 to 23, 1924



Model S.—Portable Stormizing Machine. Capacity, 2½ to 4½ in. bore.

# STORM MFG CO

Minneapolis

Dept. A

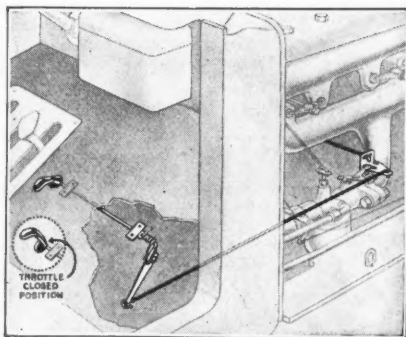
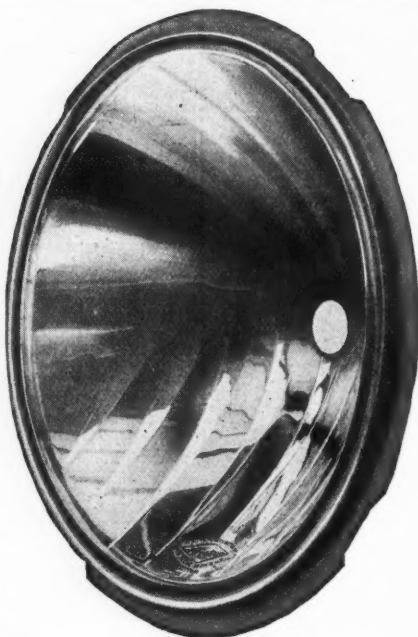
Minnesota

1

### The Victor Projector

A new light projector now supplied in Victor headlamps and also separately for Ford headlamps.

It throws the full light hundreds of yards ahead but not above the level of the lamps. It cannot blind an approaching driver. Only a plain lens need be used. Legal in all states. Write for the full details.

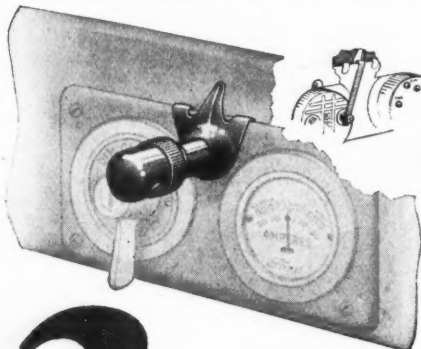


2

### The No. 10 "Simplex" Foot Accelerator

for Fords can be easily installed without drilling. It has a smooth positive ac-

tion and will not jam. It is strongly made, no wires or flimsy fittings to break. Comes packed in an attractive Victor carton. Six cartons in a display box for use on counter or in window.



### The Victor No. 20 "Barnacle" Dashlamp

goes on the Ford dashboard in a few minutes. Loosen the screws on the switch plate, hook the Barnacle in place, attach tape conductor to ammeter terminal and tighten screws. A fine car convenience with a self contained switch.

3

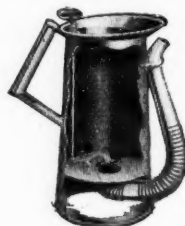
*New*  
**Victor Products**

The Cincinnati Victor Co.  
714 Reading Road Cincinnati, Ohio

## Three Trade-Builders for Garages and Filling Stations—

The success of Brookins Products has been due entirely to one thing,—and that is their ability to help any garage or service station win customers' good will, get more customers, increase trade, build up profits. The Brookins Measure is the standard oil measure of the world today. Other Brookins Products, shown below are climbing steadily toward the same world leadership.

### The Brookins Oil Measure



The most convenient, efficient and durable of all oil measure. It has a flexible metal nozzle that reaches any oil hole without the use of a funnel. Oil flow is started, stopped, controlled by a thumb-valve operated at the rim. A wide lip prevents spilling when brim-full. Made in one, two, four and five-quart sizes, all copper-finished.

### Brookins Instant Price Charts



Permanent steel charts, lithographed on both sides and weather-proofed by baked enamel. Each chart shows price per gallon and corresponding quantity prices from one to twenty gallons. Supplied in both even cents and half-cents. Complete price range in each set. Chart fits directly on pump—can be changed instantly. Insures accurate price quotation—eliminates disputes.

### The Brookins Emergency Gas Can



A sturdy two-gallon can, fitted with a flexible metal tube instead of a spout. Carries any distance without spilling. Flexible tube reaches any gasoline intake port without funnel—no spilling, no waste, no danger. An emergency service can that will be appreciated by every customer.

Write for samples and prices of these Brookins Service Products.

THE BROOKINS MFG. CO., DAYTON, OHIO

**Brookins**  
SERVICE STATION EQUIPMENT

# “Oil-Vac”

**A New and Better Principle  
In Vacuum Fuel Feeding**

## DO YOU KNOW—

*What Happens at 55 M. P. H.?*

Do you know that your motor requires 20 ounces of fuel per minute?

Do you know that it requires at least 4 inches of mercury suction to supply 20 ounces of fuel per minute?

Do you know that the suction from the intake manifold is less than 4 inches of mercury?

Do you know that with Oil-Vac the suction is more than 15 inches of mercury?

## DO YOU KNOW—

*What Happens on a Hill at 20 M. P. H.?*

Do you know that your motor requires 10 ounces of fuel per minute?

Do you know that it requires more than 3 inches of mercury suction to supply 10 ounces of fuel per minute?

Do you know that the intake manifold suction is less than 2 inches of mercury suction?

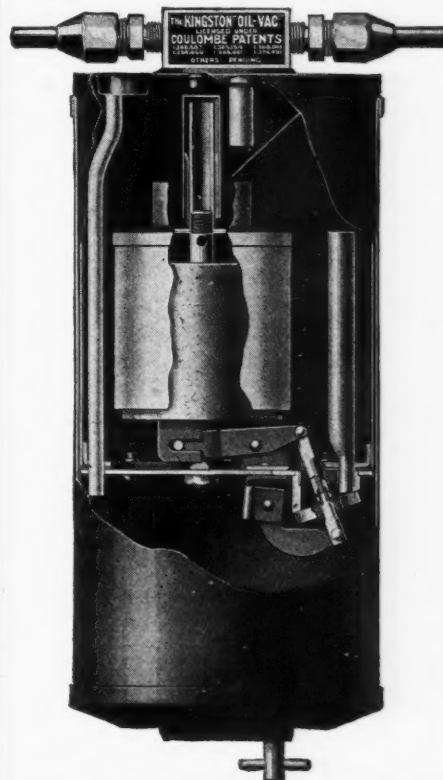
Do you know that with Oil-Vac the suction is more than 10 inches of mercury?

## OIL-VAC SMOOTHS OUT THE HILLS

Dealers in cars using Oil-Vac as standard equipment should write for our Oil-Vac booklet. We have special information of great value to them.

**NO OIL—  
NO VAC—  
NO GAS—**

WITH OIL-VAC, the Kingston Vacuum Fuel Feeding System, the vacuum is produced by the circulating flow of oil, and increases with the increased speed of the motor. In other words, as the need for more fuel arises that need is supplied. This assurance of sustained power, on long grades, in rough going, and among the hills, will be appreciated by every motorist. The best qualities of Oil-Vac are most apparent in emergencies. With Oil-Vac the vacuum ceases when the oil supply becomes exhausted. No motor can operate, or should operate, without oil, so Oil-Vac, besides many other important features, contributes this valued factor of safety.



**BYRNE, KINGSTON & CO. KOKOMO, INDIANA, U. S. A.**



# The Drill that Knows how much pressure each job needs

Knows better than the most experienced mechanic the exact amount required. Applies this pressure of its own accord. All you do is turn crank at any speed.

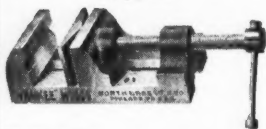
The "Yankee" Automatic Friction and Ratchet Feed takes the place of hand feeding. Friction Feed runs drill down to work. Ratchet Feed sends Drill through the cut at exactly the right pressure. One hand is always free to hold work. No worry about the bit. Drill can't jam or strip—feed throws off automatically.

Has two speeds changeable at a finger's touch of Gear Shifter (shown between small gears).



## "YANKEE" BENCH DRILL

No. 1005 (illustrated) Two Speeds, 3-jaw chuck. Holds drills up to 1/2 in. Height 26 in.  
No. 1003 Single speed, 3-jaw chuck. Holds drills up to 3/4 in. Height 18 3/4 in.



### "Yankee" Vise No. 990

For use on "Yankee" Bench Drills. Accurately machined to hold work square either flat or on side. Swivel jaw (removable) holds round or taper work.

#### Some other "YANKEE" Tools

Spiral Screw-drivers	Ratchet Screw-drivers
Quick Return Spiral Screw drivers	Ratchet Breast Drills
	Ratchet Hand Drills
	Automatic Push Drills

Dealers everywhere sell "Yankee" Tools.

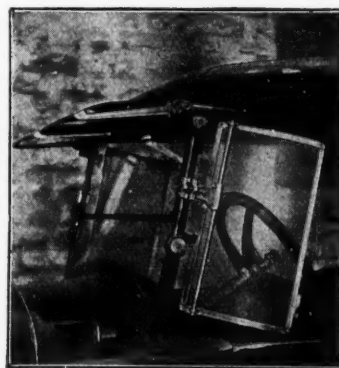
Today, write for your copy of the "Yankee" Tool Book. Illustrates and describes the entire line of "Yankee" time and labor saving tools.



NORTH BROS. MFG. CO., Philadelphia, U. S. A.

# "YANKEE" TOOLS

*Make Better mechanics*



## Something New!

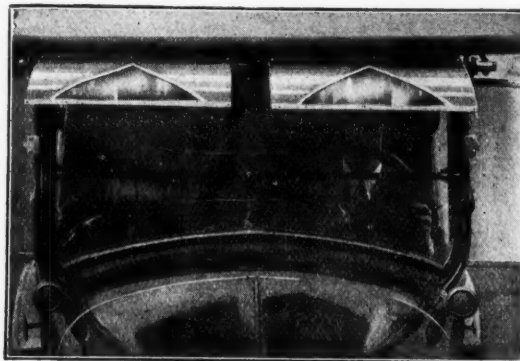
### Eclipse Glass-Less Wings

A windshield wing of new transparent material that can't break—warp—crack or fade. A tremendous improvement over glass.

Instantly adjustable from the inside without unfastening of a nut or bolt.

Fits any windshield post and cannot work loose under any condition. Every adjustment angle is provided. Furnished in clear white or amber.

These Glass-Less Wings add over 18 inches of width to any windshield and are a great protection against wind, rain and snow. Furnished with inside control for \$10.00 (as shown) or with outside control for \$8.00. Set in Polished Aluminum frame with nickel fittings. Fit all cars.



## ECLIPSE

### Safety Driving Shade (visor)

Only Visor made that is instantly raised or lowered from the inside of car by driver from his seat. Instantly eliminates Glare—regardless of approaching car angle.

#### A big selling feature

Division in center of wings enables driver to see road and sidewalk to the right. "Windows" are of unbreakable transparent material furnished in blue, green or amber. One size fits all cars—\$10.00 complete.

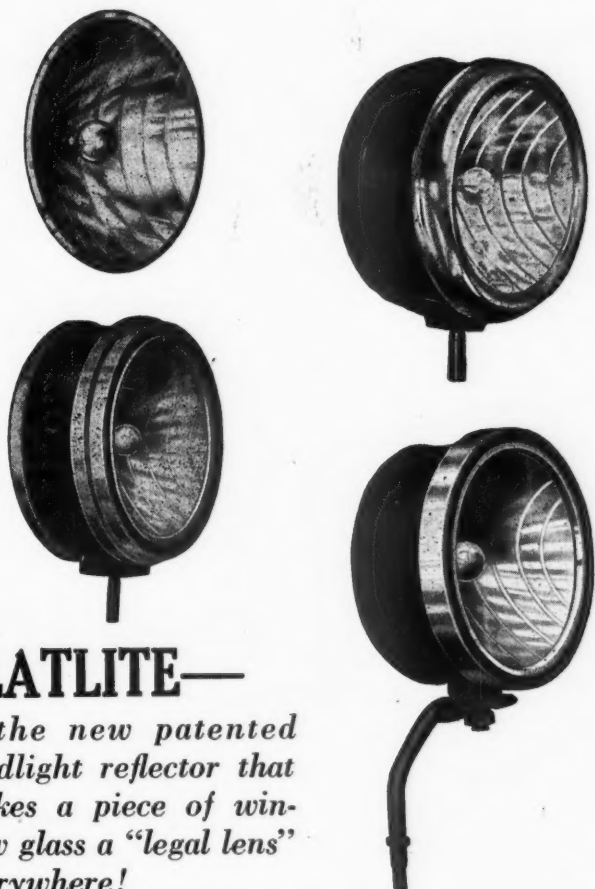
At your jobbers or write direct.

## SUBURBAN TRANSIT CO.

PLAINFIELD, N. J.

Subsidiary of Spicer Mfg. Corporation

# You'll get the business if you've got the goods!



## FLATLITE—

is the new patented headlight reflector that makes a piece of window glass a "legal lens" everywhere!

You can't sell a motorist "the next to the best" if he knows he can get the best at the same price, or just a little more. By the same token, you can't sell an article that's "as good as a Flatlite" when the prospect knows he can get Flatlite equipment! You'll get the reflector and complete headlight business if you have got the goods—if you offer Flatlites.

The popularity of Flatlites is spreading everywhere. Motorists are learning that to be Flatlite equipped means to have a generous flood of light for safe night driving—a beam that is cast brightly far down the road and yet is a legal light in all states! To sell Flatlite is to sell the right light. This popularity means profits, as has been proven by the unsolicited letters from dealers and jobbers, that we have published from time to time in this publication. Let us send you more proof—let us show you how to substantially increase your profits with Flatlite Reflectors and Lamps. Send the coupon now.

# Flatlite

*"Sells as a reflector or  
complete headlight"*



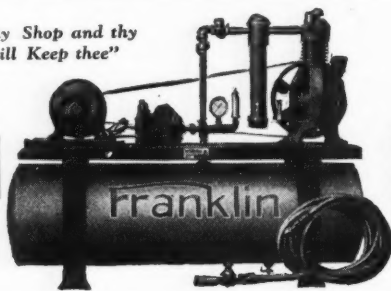
THE AMERICAN FLATLITE COMPANY  
1100 Gilbert Ave.  
Cincinnati, Ohio

Gentlemen:  
Send me full particulars on the FLATLITE proposition.

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

"Keep thy Shop and thy  
Shop will Keep thee"



## Will Your Compressor Stand This?

**Y**OU CAN'T MOVE AROUND St. Louis without seeing the familiar Elco Service Station. At one of these fine stations on Grand Avenue they have a Franklin Super Single Stage Compressor that works 18 hours a day to fill 4 service wagons, wash cars, and to supply the air for 5 hoses.

Eighteen hours a day, 7 days a week—because there's nothing to get out of order on a Franklin. No unnecessary parts, no complicated devices, no fancy accessories—just a clean, clear deck with every working part built for real service and thoroughly tested before leaving the factory, from the best of motors to the Franklin Spiral-fin Cylinder.

A real money saver on the Franklin outfit is the famous Unloader. It allows the motor to start without a load. When she speeds up, centrifugal force throws the Unloader out of line and compression starts. A 32-



One of the many Elco Service Stations located in St. Louis

gallon tank; an automatic control switch; a positive safety valve; an oil separator that prevents the intake of oil and sediment; a malleable iron, leakproof manifold; pressed steel deck

and legs—these are some of the many Franklin features.

The Franklin Super Single Stage Compressor is made in only one model, with standard replacement parts, the size suitable for the needs of 95% of all garages and service stations. You can make free air pay by using a Franklin—it's a real money saver. The price is \$225, f.o.b. Norristown. Order from your Jobber today, or write the factory for full particulars.

# Franklin

## Super Single Stage Air Compressors

FRANKLIN AIR COMPRESSOR WORKS  
2604 MAIN ST., NORRISTOWN, PENN.

We make the Franklin Air and Water Station

## This Sells Wheel Pullers!



—and we  
can  
prove  
it

## Triples Sales —automatically

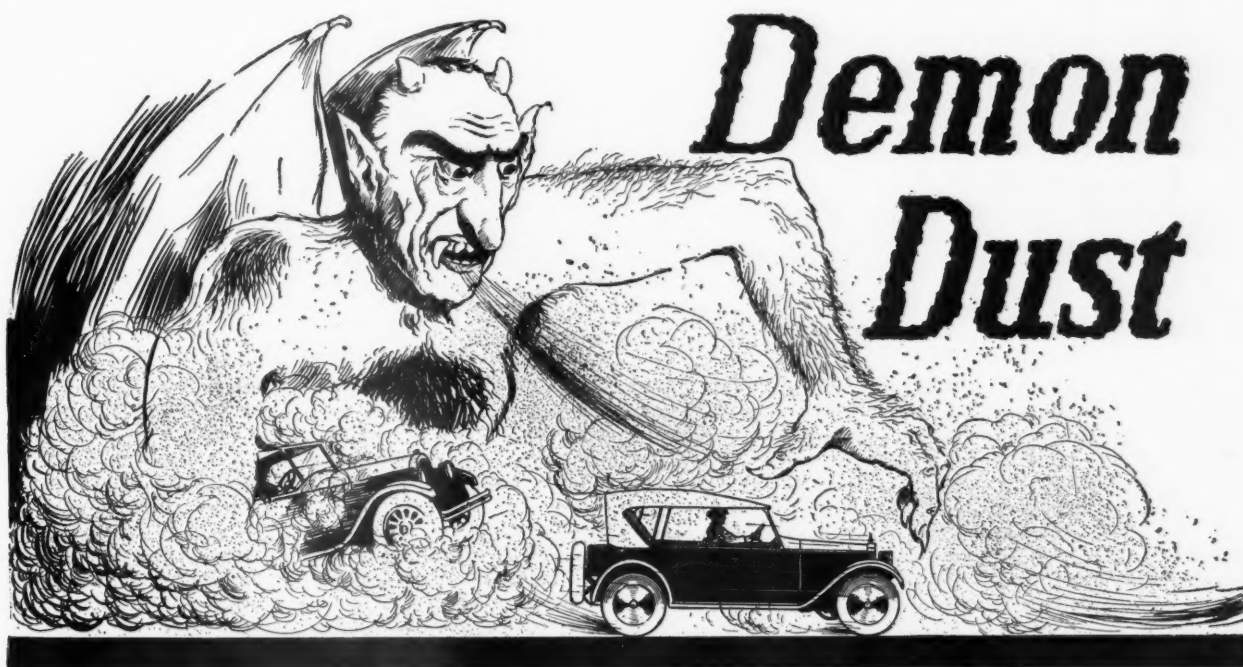
And it is FREE. The jobber pays only for the Crane Wheel and Gear Pullers displayed on it. Painted in bright, attractive colors, this display rack is proving the best kind of a salesman. Jobbers report big increases in wheel-puller sales since standing it on their floors. "Well displayed is more than half sold." This display stand carries the complete CRANE line for 1924—8 pullers, two styles, namely, two arm and Crofoot pullers in four sizes, No. 0, No. 2, No. 3, No. 3X—every item with a record for steady turnover. Positively no slow-moving merchandise included. Sell direct from this display stand—and double or triple your wheel-puller turnover.

We are exhibiting at the Automotive Maintenance Equipment Show at Detroit—Space 100.

Crane Puller Co.  
Arlington, Mass.







## Road Dust Is Slow But Sure Death to Automobile, Truck and Tractor Motors

9,000 gallons of air—charged with road dust, sand and grit—are drawn through the carburetor into the motor with every gallon of gas.

This abrasive material soon causes carbon, scored cylinder walls, loose piston rings, worn pistons, noisy gears.

To prolong the life of the motor equip the car you sell with a Protectomotor.

The Protectomotor is a device that really filters the dust, sand and grit out of the air supply and offers complete protection to the motor.

Equipped with a Protectomotor any car, truck or tractor will run 3 to 5 times longer before removing carbon, grinding valves or overhauling the motor is necessary.

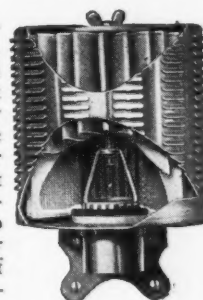
**Staynew Filter Corporation**  
Rochester, N. Y.

Branches: 1926 Broadway, New York City; 222 Henshaw Bldg., Oakland, Calif.; 5943 Ellsworth Ave., Pittsburgh, Pa.; 403 Real Estate Exchange Bldg., Detroit, Mich.; 1031 Cathedral St., Baltimore, Md.; 4763 Hollywood Blvd., Los Angeles, Calif.

**DEALERS:** Thousands of owners have ordered Protectomotors direct. You may as well have these sales and the profits. Besides the profit you make on an installation, you make that customer a booster for the car you sell and your sale of cars depends on satisfied users. Write today for dealers' terms.

**PROTECTOMOTOR**  
REG. U.S. PAT. OFF.  
**Perfect Positive Protection**

Filters ALL the road dust, sand and grit out of the air supply to the carburetor and motor. It has no moving parts to wear out or get out of order. Requires no cleaning or other attention. Does not restrict flow of air or reduce horse power. It is 99.9% efficient under any and all conditions.



Installed as standard equipment by General Motors Truck Company, International Motor Company, Fageol Motors Company, J. I. Case Threshing Machine Company, Holt Manufacturing Company, Clark Tractor Company, Bean Spray Pump Company, Le Roi Engine Company, Elgin Street Sweeper Company, Turner & Moore Engine Company and many others.

*The Federal Authorized Sales Agency Sign—nationally advertised for years—is the public's identification of every Federal dealer.*



## The Federal Sales Plan Assures Successful Business

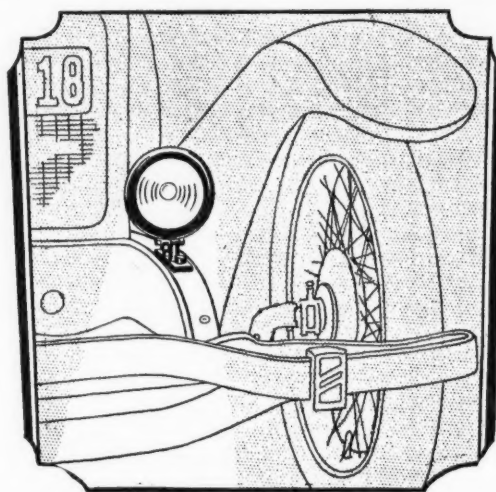
TO make the handling of Federals an unusually profitable line for the dealer—the Federal Authorized Sales Agency Plan includes features no tire dealer can afford to overlook.

Federal Tires through years of unusually satisfactory service have convinced motorists in every community of their outstanding ability to give reliable service at exceptionally low cost. The Blue Pennant Passenger and Truck Cords and Defender Cords complete a line that can answer any price requirement or satisfactorily fulfill the demands of any work on any kind of road.

*There are interesting angles to the Federal Sales Agency which the Federal salesman will gladly explain.*



## Something NEW in lighting Equipment



The S & M Road-Lite No. 75

This new lamp for lighting the right edge of the roadway is a practical accessory and a very popular seller. Better order a few—they go fast!

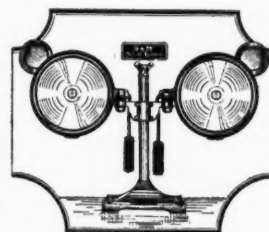
## S & M SPOT-LITES *Legal Everywhere*

Your line is not complete without S & M Spot-Lites—America's Best, most powerful and durable Spot-Lites because of 40 years of lamp experience.

Customers will stop and buy

This handsome display Stand should be working in your store as a Silent Salesman

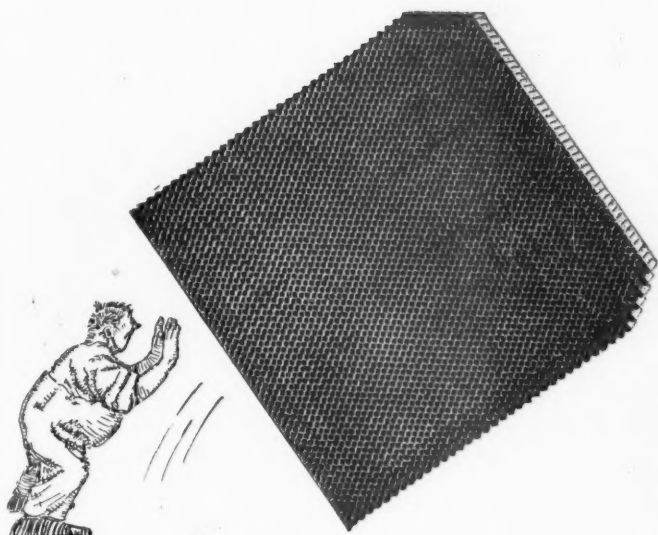
Send for it and let it sell S & M Spot-lites for you when you are busy.



S & M Display Stand

Our NATIONAL DISTRIBUTION makes us as near to you as your JOBBER—write him!

**S & M LAMP CO. (INC.)**  
118 W. 36th St. Los Angeles, Calif.



## Quick Turnover!

Build a radiator replacement business in your town. The opportunity is big—the profits are worthwhile.

Handle the Fedders Shallow Core—the greatest replacement core ever built. It is shallower, lighter and more easily handled than other replacement cores and, because of its unique construction, its cooling efficiency is unsurpassed. Fedders quality throughout.

No need to carry a big stock. Carry a few popular types and order others as needed. Fedders gives 24-hour service on cores for practically all cars. No tied up capital, no deteriorating stock, quick turnover, customer satisfaction, expanding business, good profits.

*Write today for details.*

**FEDDERS MFG. CO.**  
BUFFALO, N. Y.

Branches in Cleveland, Detroit, Indianapolis,  
New York, San Francisco

## REPLACE WITH



# Shallow Cores

## Special Garage Set No. 10 PE

### WATERVLIET SPIRAL EXPANSION ALIGNING REAMERS

The Set That Keeps You  
Set

*For Practically All Piston Pin Jobs*



Ten perfect reamers in a sturdy oak case. Sizes from 11/16" to 1 1/8". Expand accurately for oversize jobs. Easy to micrometer. Each will do the work of several solid reamers.

The Watervliet is the original, spiral, expansion, reamer with self-cutting front pilot. Pilots guide for true alignment. Spiral flutes do finish reaming only. Leaves full bearing surface with mirror-like finish.

**WILL NOT CHATTER**

*Ask your Jobber or Write for Literature*

**WATERVLIET TOOL CO., Inc.**  
Main Office and Works

1037 Broadway

ALBANY, N. Y.

New York City Office—17 W. 60th St., New York City  
Pacific Coast Office—661 Turk St., San Francisco, Cal.  
Chicago Office—538 S. Clark St., Chicago, Ill.



# COMFORT'S REPAIR ORDERS

## FORM 100

Get every cent of profit that's due you on repair work by using Comfort's Tripligate Repair Orders—Form 100.

### Prices Delivered—Your City

250 Sets—	\$ 5.60
500 Sets—	\$10.20
1000 Sets—	\$14.80
2500 Sets—	\$34.40
5000 Sets—	\$61.20

5000 sets with your name on 1st and 2nd copy, \$66.20.

5000 sets with your name printed and all three copies numbered, \$71.20.

Millions of these forms sold in 1923! Order today and be ready for the Spring rush!

Send Your Letterhead if Name and Address is to be Imprinted

## Comfort Printing Specialty Co.

101 North Eighth Street, Saint Louis, Mo.

## The Service that brings buyers

**Water  
and Air!  
with one  
outfit—**

The big touring season is at hand. Those garages and filling stations that offer complete service will get the bulk of this tourist business.

Install the Milwaukee Air Power Water System now and be prepared to give real service. One Milwaukee Air Power System supplies fresh water direct from the well, enables outlying filling stations to provide comfort station conveniences — supplies air for tires.

### Milwaukee Air Compressor

This is the economical, dependable tire-charging outfit. Has the perfect Milwaukee Packless Globe Valve. Leak proof. Simple, dependable, automatic. Holds air indefinitely.

Write for complete information and name of nearest dealer.

**MILWAUKEE AIR POWER  
PUMP COMPANY**

51 KEEFE AVENUE MILWAUKEE, WIS.

Largest exclusive manufacturers  
of Air Power Pump equipment



TRADE

MARK

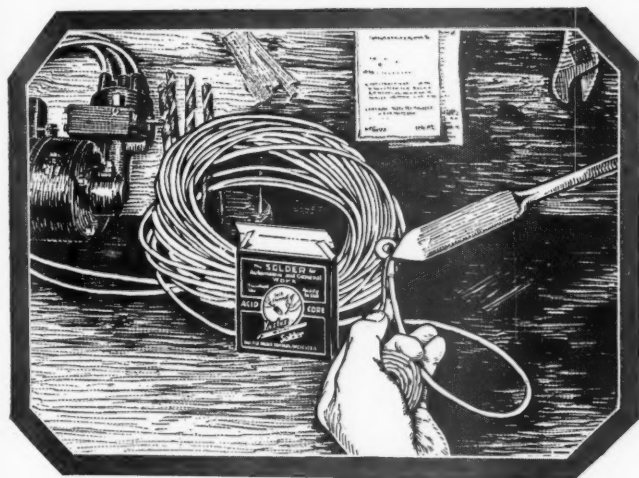
## KESTER SOLDER

Self-Fluxing



(Underwriters' Laboratories Inspected)

"Requires Only Heat"



### For This Important Work

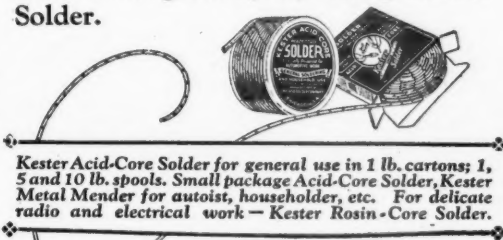
**Y**OU know how important good ignition contacts are to the efficient operation of a motor.

Carelessly twisted wires around the binding post waste "juice." Terminals soldered to ignition wires assure a hotter spark because these contacts mean little or no leakage of current.

Use Kester Solder not only to save "juice," but also because Kester saves time, labor and material over the old way of soldering.

Kester Solder requires only heat, because inside this hollow wire solder are tiny pockets full of flux. As the solder melts, the correct amount of flux flows to the job, right where it is wanted.

Start saving today by using Kester Solder.



Kester Acid-Core Solder for general use in 1 lb. cartons; 1, 5 and 10 lb. spools. Small package Acid-Core Solder, Kester Metal Mender for autoist, householder, etc. For delicate radio and electrical work—Kester Rosin-Core Solder.

Manufactured by the  
**CHICAGO SOLDER COMPANY**  
4203 Wrightwood Ave.  
CHICAGO, U. S. A.

## The New BETHLEHEM

### THE CONTRACT

With a substantial new Corporation in business to stay.

Every contract direct with the factory. Perpetual—automatically renewable year after year.

Flooring plan.

Retail deferred payment plan.

### THE PRODUCT

Shock insulated — (oil magazine) and high pressure chassis lubrication — less attention from driver—a perfectly lubricated truck.

Bethlehem's own motor.

Electric lighting and starting equipment all models.

Bosch A T truck magneto.

Steel wheels all models.

Weights legal in all states.

Spiral Bevel and dual reduction rear axles.

Not just another truck—"ALL A MOTOR TRUCK SHOULD BE."

"AIRLINE", 1 Ton.....	\$1,595
"FAST FREIGHT", 2 Ton.....	2,495
"STURDY", 2½, 3 Ton.....	3,195
"HEAVY DUTY", 3, 3½ Ton.....	3,795

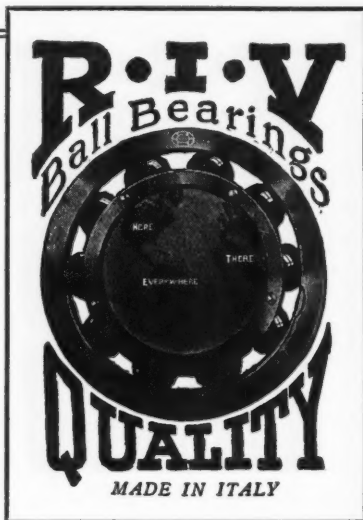
## BETHLEHEM MOTORS CORPORATION

of New York

ALLENTOWN

PENNSYLVANIA

## Build Your Business Soundly With R. I. V.



**R. I. V.** HAS only one story to tell to the automotive world—the simple story of proved ball-bearing quality.

That's our story—and we're going to stick to it. In the replacement field R. I. V. is supreme. It is a trade-winner, a trade-builder, a trade-holder.

And every one of our distributors—the best ball-bearing men in the United States—knows that the R. I. V. proposition becomes more valuable every year and every month. The profit you can count on year after year comes only from a quality product.

*We have room for more distributors—particularly in the Central West. Write for our proposition now!*



**Fisk Building, 57th Street at Broadway, New York City**

Branches: Chicago, Detroit, San Francisco

## Let Your Name Be Known "ALLOVA"

**H**AVE the best advertised business in your territory! Let your employees wear "ALLOVA" work suits with your name or trademark on them. These high-grade, long-wearing suits keep your men looking trim and neat and advertise your garage, tire shop or service station.

Get "ALLOVA" suits Direct from Factory at prices no more than overalls:

6 suits \$3.25 each	25 suits \$2.87½ each
12 suits \$3.00 each	50 suits \$2.75 each

Your name or trademark attractively embroidered in red, blue, white or black, 25c per garment. At these prices you can sell to your employees at wholesale. "ALLOVA" work suits are extra well made of best grade cloth—khaki, blue, white or blue and white striped. All in one piece. All buttons covered. Built comfortable and roomy. Outwear ordinary suits! Hip and front swing pockets reinforced with extra thickness of cloth. Sizes 36 to 50. No extra charge for large sizes.

**Write for Sample Suit!** Send us your name or trademark. We will make a special sample suit for your approval. State size and color wanted. If not fully satisfactory, return suit at our expense. Send today.

**MOTOR SUIT MFG. CO.**  
701 Central St., Kansas City, Mo.

**Keep Your Men  
Looking Trim and Neat**



# ALLOVA WORK SUITS





## "The Fastest Selling Article of its Kind"

THERE are many cleaners and polishes on the market. They come and they go, but for *seven years* the demand for H L F has increased steadily and rapidly. To-day it occupies a pre-eminent position in the industry. Owners now accept H L F as the *one* cleaner which rapidly restores the beautiful finish of a car. Backed by a fair and square sales policy. Advertised and merchandised so that dealers and jobbers can "CLEAN UP" stocks and "CLEAN UP" profits.

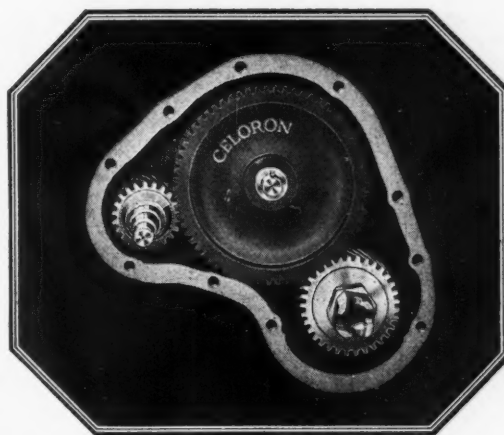
*Note Saturday Evening Post advertising that begins in June*

# HIGH LUSTRE FINISH

A fair-dealing sales policy plus a standard quality product, sold through jobbers exclusively.

"CLEAN UP" WITH  
H L F

H. L. FEASEL'S LABORATORY  
9-11-13 DESBROSSES ST.  
NEW YORK CITY



*In this gear set the camshaft gear is molded Celoron and the generator and crankshaft gears are metal.*

## Timing gears of stabilized Celoron

The stabilized gear material is now being produced in quantity. Whether you require molded gears or gears cut from sheet stock, your needs can now be promptly taken care of.

Gears of Celoron do away with metal-to-metal contact. They eliminate snarls, grinds, and hums for the life of the car.

### The silent gear drive

Celoron Silent Timing Gears, properly mated with metal gears, permanently prevent wear. In operation they are accurate and positive. At all car speeds they are *silent*. Celoron Silent Timing Gears are light, tough and resilient. They reduce vibration, cushion shocks, lengthen the life of shaft bearings.



*This shows the large number of Celoron discs necessary to make the gear blank shown below.*

### Stabilized gear material

Celoron is a laminated phenolic condensation material bonded with bakelite. It is oil-proof, grease-proof, water-proof. It does not swell.

You can have Celoron Silent Timing Gears installed in your car by any service station or repairman. Gears of Celoron fit any timing gear set. On many popular makes of cars they are now standard equipment.



*The finished Celoron gear blank made from discs of Celoron compressed at a high temperature.*

### CELORON SILENT GEARS

Celoron is made into Silent Timing Gears for the replacement trade by Dalton and Balch. Jobbers and dealers all over the country carry stocks of these gears.

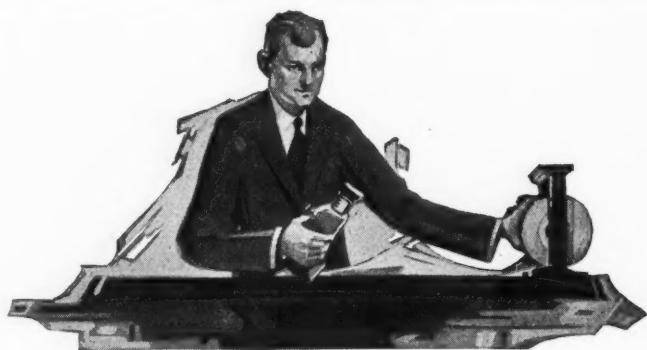
Look for the "Celoron" and "D & B" marks. They insure your getting a genuine Celoron Silent Timing Gear.

## Diamond State Fibre Company

Bridgeport, Pennsylvania

Branches in Principal Cities

Toronto, Canada—London, England



**"This jack stand sells more jacks  
in a day than I sold in a week"**

"I sold 9 jacks the first day I had my new Reliable Jack Seller!  
That's more than I used to sell in a week."

Isn't that pretty good work for a stand which cost this garage-  
man nothing?

You can make good profits in the same way. Just send in the  
coupon ordering a standard assortment of 12 popular Reliable  
Jacks and we will send you, free, the stand to sell them. Give  
your jobber's name when you write.

**ELITE MANUFACTURING CO.**

DEPT. MA-7 ASHLAND, OHIO

**RELIABLE JACKS**



**Send one now!**

I want a Reliable Jack Seller,  
free, so send me 12 Reliable Jacks  
and bill me through my jobber.

## Lonesome Leadership

IN A class by itself the  
"Pacific" is all by its  
lonesome. It craves competi-  
tion because confidence  
of former conquests has  
proved it to be first when  
it comes to

**Speed  
Safety  
Accuracy**

The jack-screw principle of  
leverage affords maximum  
strength and complete control of  
operation. No patented locking  
devices used.

Pacific Rim Tool Co.  
16606 Waterloo Road,  
Cleveland, O.  
2337 11th Ave.,  
Seattle, Wash.



Export  
Office  
1134 B'way  
N. Y. City

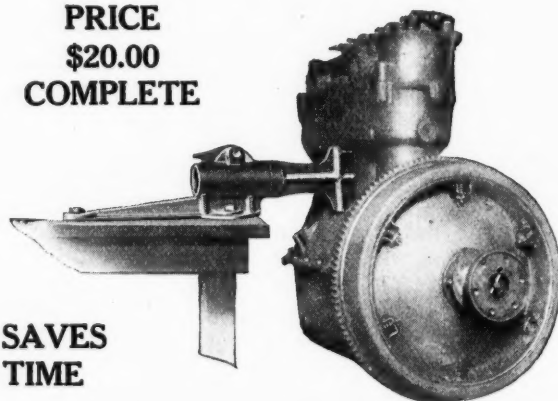
**PACIFIC  
RIM TOOL**

**\$10.00**

LIST PRICE

Attractive  
Discounts to  
the trade

**PRICE  
\$20.00  
COMPLETE**



**SAVES  
TIME**

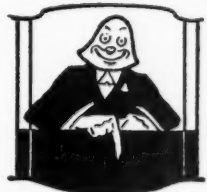
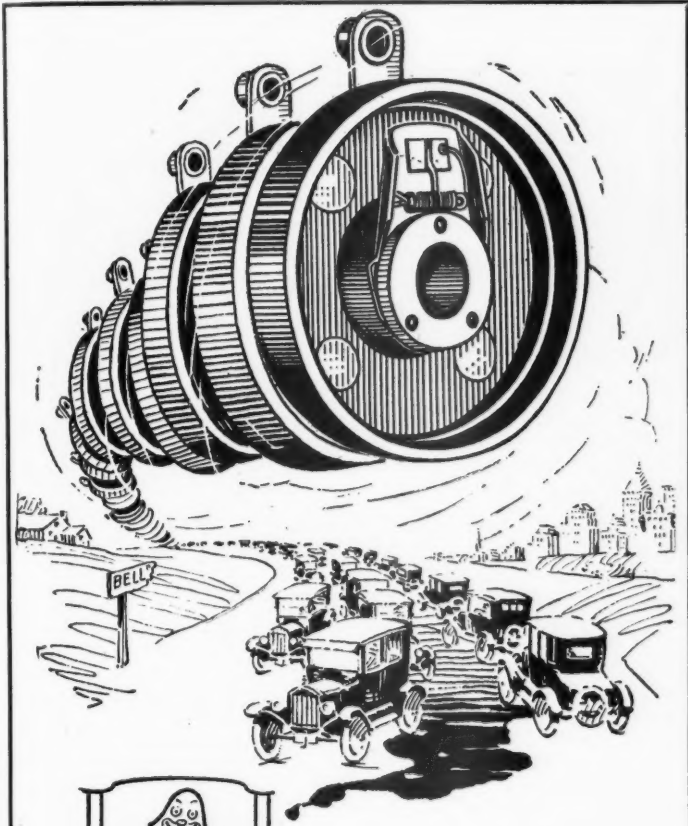
**FOR CHEVROLET SERVICE  
STATIONS**

**No. 6 Banner Motor Block Support**

Overhauling jobs can be completed and head replaced be-  
fore dropping back in chassis. Can be turned in any posi-  
tion. Will not press cylinders out of round. Makes  
engine work a one man job. **WE ALSO MAKE THE  
O'BRIEN ENGINE SUPPORT FOR ALL DETACHABLE  
HEAD MOTORS** as well as forty other accessories.—  
Manufacturers' Agents Wanted.

**Banner Accessory Mfg. Co.**

2629 La Salle St., St. Louis, Mo.



### Going Like a Whirlwind

Jobbers and dealers tell us that the BELL is becoming their fastest-selling Ford timer—because every user is a salesman.

## The BELL TIMER

*"Built like a high-grade distributor"*

is made to create satisfaction. It cannot rust, warp, or get "lumpy," and needs no oiling or attention. Copper contacts molded into solid Bakelite shell; copper brush; perfect wipe contact.

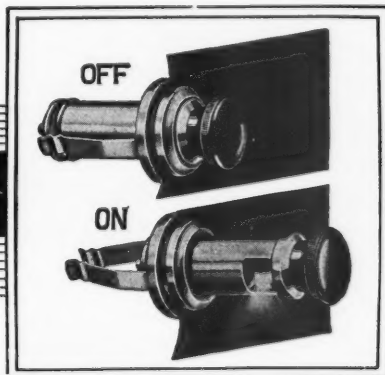
*If you don't stock Bell Timers write us today.*

**Bell Manufacturing Co.**  
13 Elkins St. Boston 27, Mass.

*Another winner in the sales race is the ingenious*

### BELL DASH LAMP

*For Fords and other cars  
Sells on sight*



## Flat Rate Wins in My Shop

because I WILL NOT stand for slow out-of-date ways.

For instance, I used a grease-mixed valve grinding compound because everybody used it years ago.

Grinding with grease is out of-date now, so I use

### PEP WATER-MIXED GRINDING COMPOUND

and get a *better* job in *half* the time.

I HAVE TO USE EVERY QUALITY TIME-SAVER LIKE PEP TO MAKE MY INCREASED PROFIT ON THE FLAT RATE.

If you haven't found out about PEP yet, something is getting away from you that you ought to know.

*Better not turn this page till you've sent in this coupon for a free sample.*

MAIL THIS COUPON NOW. DON'T PUT IT OFF  
To PEP MFG. CO., Inc., 23 W. 42nd St., N. Y.  
Check free samples wanted  
Pep Valve Compound ☐  
Pep Bearing Compound ☐  
Write name and address in margin in pencil  
M.A. 5-15



*for —*

Gasket Paste  
Battery Terminals  
Hose Connections  
Spark-Plug Threads

Door Squeaks  
Manifold Paint  
Any Wearing Point

*and —  
on spring leaves also*



Some people only use Key Graphite Paste as a filling compound when sealing the cylinder block, crank case, transmission housings, etc.

Others know it as a most effective com-

pound to prevent sulphate corrosion on battery terminals.

But—owing to its graphite content it is a most efficient spring lubricant also. It contains no oil or grease and will not gum or pick up dirt. The spring leaves slide over each other with a natural friction, eliminating the whip action so prevalent when oil is used.

Now—can't you see a big advantage in stocking one compound that will do all these things—and more?

**KEY BOILER EQUIPMENT CO., INC.**

27th and McCasland Ave., East St. Louis, Ill.

**— Sample — FREE —**

Key Boiler Equipment Co.,  
27th and McCasland Ave.,  
East St. Louis, Ill.

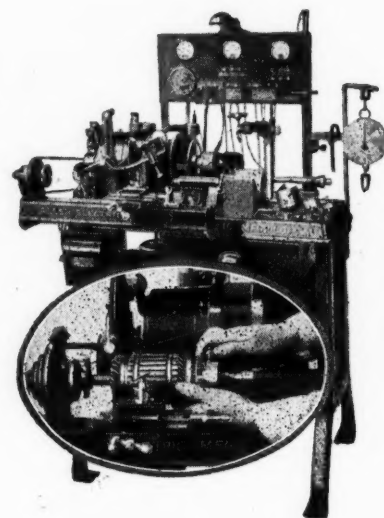
Please send me without charge or obligation a sample of Key Graphite Paste.

Name .....

Address .....

Business .....

MA 5-15



## Allen Universal Test Stand with LATHE

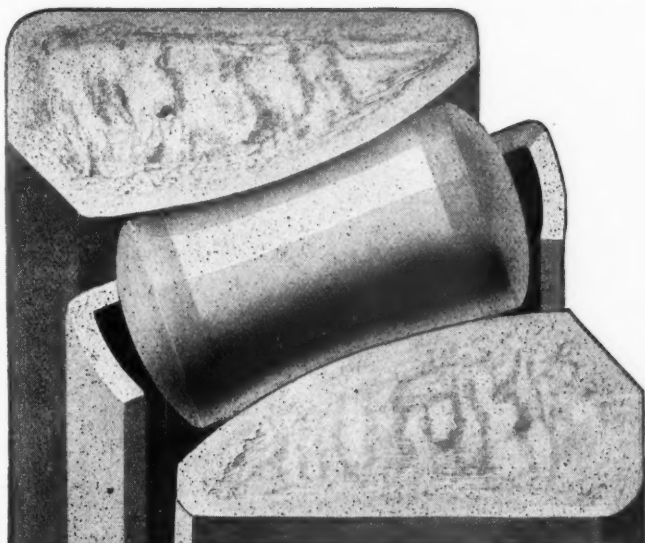
For the first time the new Allen Universal Test Stand — with Lathe attachment will be shown at the Automotive Maintenance Equipment Show in the General Motors Building, Detroit, May 19 to 23.

Already the finest piece of electrical testing equipment the Lathe (which is optional) makes the Allen Universal Test Stand a unit no high-grade service station can afford to be without.

*See it at the Show. Write  
for our catalog at once.*

**ALLEN ELECTRIC MFG. CO.**

2051 Lafayette Blvd., West, Detroit, Mich.



## SHAFER

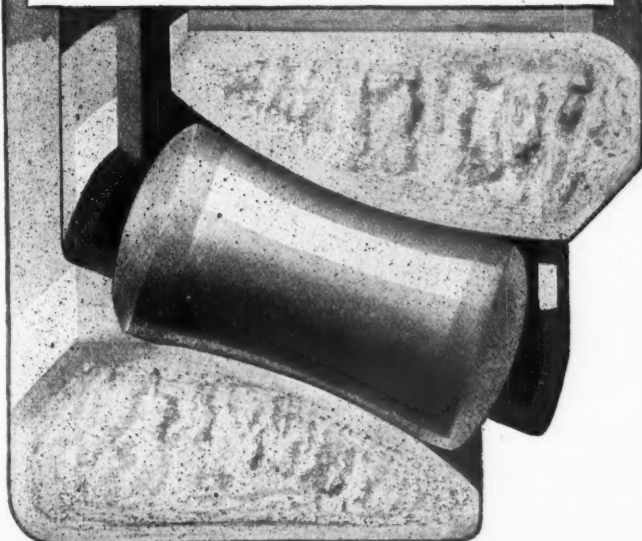
*Self-Aligning* ROLLER BEARING

PAT. & PATS. PENDING

USED as original equipment or for replacement purposes, Shafer Roller Bearings are guaranteed to give good service. They are self-aligning and have ample capacity for carrying all combinations of thrust and radial loads.

*Distributors in All  
Principal Cities*

**SHAHER BEARING CORPORATION**  
6501 WEST GRAND AVENUE  
CHICAGO, ILL.



**This better belt**  
*makes you more money*



GRATON & KNIGHT Link "V" Fan Belts increase your profits, because they sell easier and quicker. Definite superiority speedily convinces your customer this *master belt* is the one he must have!

Links of tempered steel and vulcanized fibre give giant strength. They absolutely prevent stretching. Around them is a heavy, clinging traction surface of Graton & Knight *standardized leather*!

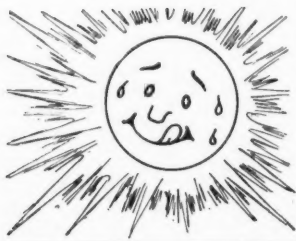
This *standardized leather* gives the belt its mighty grip. It hugs the pulleys and pulls evenly. So it can be run slightly slack, which saves bearings. More flexible than any other fan belt. Therefore runs well on very small diameter pulleys. *Can be made endless with a screw-driver.*

The margin in Graton & Knight Link "V" Fan Belts is very interesting. And the long-term, trouble-free service they give your customers wins you price-less good-will. Write your jobber to-day for prices and particulars.

**THE GRATON & KNIGHT MFG. CO.**  
*Worcester, Mass.*



**GRATON & KNIGHT**  
Standardized  
**LEATHER BELTING**



## Something cool and refreshing for FORD engines

This summer will mark the boiling point for many radiators and the engine troubles that go with it.

This is your sales opportunity—when the prospect is "warm." The Ford owner will be in the market for a Peerless Radiator. Will you be ready to sell him real cooling efficiency?

The Peerless has an extra wide honeycomb core and a larger water capacity. The core is supported by a spring cradle and is interchangeable with the regular Ford shell.

Stock now and get this replacement business in all seasons.

THE CORCORAN MFG. CO.  
CINCINNATI, OHIO

for  
FORD  
Cars

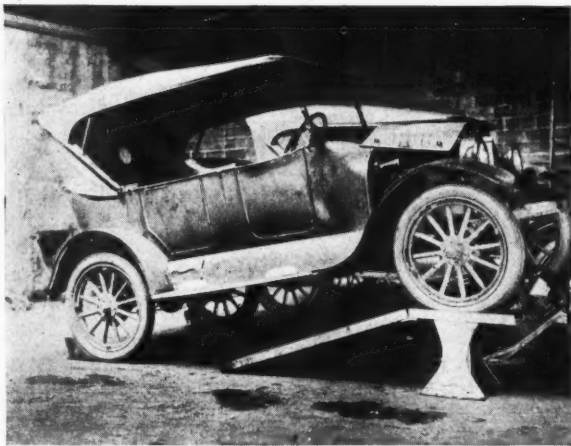
**PEERLESS  
RADIATORS**

for  
FORD  
Trucks

## AUTO WORK RACK

"BUILT LIKE A STEEL BRIDGE"

The Picture Tells the Story



"Under the Car in an Easy Chair"

**SAVES  
TIME  
LABOR  
EXPENSE**

The car runs up on it and stays there firmly at a convenient height for under work. An attachable "Jack Stand" for raising the wheels while car is on the rack, is provided without extra cost.

**INCREASES  
SHOP  
OUTPUT AND  
EFFICIENCY**

Especially useful for Engine work on Buick, Overland, Velle, Chevrolet, Dort or any car or truck with split-type crank case. Runways 8 in. wide. Height 20 in. No need to fasten to floor. Runways easily detachable. Price \$45, F. O. B. St. Paul.

**AUTO SERVICE EQUIPMENT CO.**

St. Paul, Minnesota

Also manufacturers of Auto Service Racks



## 850 Steel Spacing Washers

17 sizes—50 of each size per box. Inside diameters from  $\frac{3}{8}$  to 1 inch, .015 thick. This assortment made for adjusting end play in all makes and types of starting motors and generators. Largest washer illustrated made to go in the front end plate of Ford generator. Lateral motion thus adjusted without removing bearing from armature shaft.

Mailed, post paid, per box, \$3.50.

*If not handled by your jobber, order from us.*

*Any size or sizes used, can be replaced.*

**ARMATURES:** We rewind any and all kinds of GENERATOR, MOTOR and MAGNETO armatures, and reship same day old armatures received.

FORD GENERATOR AND MOTOR ARMATURES .....	\$ 1.50
ALL SMALL DOUBLE UNIT GENERATOR AND MOTOR ARMATURES .....	5.00
SINGLE UNIT MOTOR GENERATOR ARMATURES .....	10.00
MAGNETO ARMATURES .....	\$3.75 to \$4.75

**Armature Rewinding Co., Inc.**

3301 Washington Blvd., St. Louis, Mo.

2

## For Any Car—Large or Small K-D Auto Lamps Fit Them All

One of the big selling features of K-D Auto Lamps is that you'll find a type and size for practically every style of car.

Selling is easy—"sales-resistance" is at a minimum—for K-D Auto Lamps are known wherever automobiles are driven.

And profits! Compare these lamps with other makes—and you'll decide in favor of K-D sure.

Write for catalog and prices.

**The K-D Lamp Co.**

Cincinnati, O.



### No. 28 Parking Lamp

Body is made from solid casting, top removable for new bulbs. To install, drill one hole in fender, fastening underneath with lock washer and nut which we furnish.

Glasses are cut jewel type, ruby in rear, crystal in front. White ray in front; red light in rear.

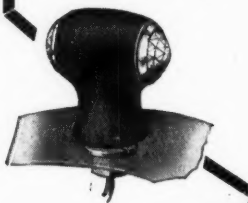
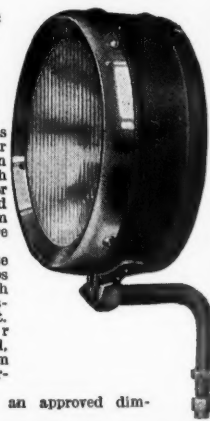
Separate switch on instrument board. Bulbs are 2 c.p., 6-8 volt, single wire circuit only.

### Drum Type Head Lamps for Ford Cars

No. 9-D has one nickel door and is finished in black enamel with nickel-plated door only. All plated parts made from Brass, therefore rust-proof.

Unless otherwise specified, all lamps are equipped with double wiring system, 6-8 Volt. When dimmer bulbs are supplied, the wiring system will be single circuit.

Equipped with an approved dimmer lens.





## Simplicity

Portable Cylinder Reborer  
and Grinder

*You too can  
have this  
Profit Maker*

Hundreds in  
use. Pat.  
March 16,  
1915, May  
11, 1920.  
Other Pat-  
ents Pend-  
ing.

Dashiell Motor Co.  
Dodge Brothers Dealers.  
Chicago, Ill., write:

"Photograph shows Simplicity bor-  
ing and grinding Cars. Of course  
of the new Dodge Cars. Of course  
this car has not come to regrind-  
ing yet, but we wished to know if  
it would fit the new model as well  
as type '23."

"We are now boring and grinding  
in the frame all of our cars and  
we only remove the motor when it  
is necessary to scrape in bearing.  
We can save our customers about  
\$24 by this method."

"Your machine is giving us ex-  
ceptional satisfaction and has  
never needed any repairs."

Dashiell Motor Co.  
F. M. Paul, Superintendent.

You can Buy  
a Simplicity  
on Easy Terms.  
Write today  
for prices and  
terms.

Satisfaction  
Guaranteed

SIMPLICITY MFG. CO., Dept. C, Port Washington, Wis.  
Export Office: 549 W. Washington, Chicago, Ill.  
State Agents Wanted for Open Territory.



## SAFETY Front Wheel Brakes

Can be attached to ANY MAKE of car. Wonderful  
overhaul opportunity as every motorist wants to be  
up-to-date. Operates from the regular brake-pedal.  
Permits any car to stop in less than **HALF THE DIS-  
TANCE** required with rear wheel brakes alone. Safety  
feature appeals to all—especially women-drivers. Ab-  
solutely no danger of skidding.

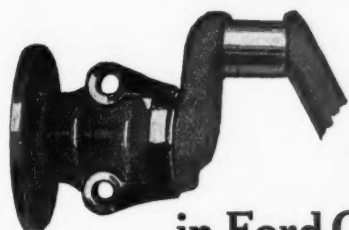
Don't pass this up. It is one of the biggest money-  
making opportunities you will have this year. Write  
us NOW about this. Big discounts.

## GREEN ENGINEERING COMPANY

740 MAIN ST., DAYTON, O.

Distributors for Front Wheel Brakes  
only. H. P. Morgan, Tampa, Fla.;  
Raid Air Spring Sales Co., Pitts-  
burgh, Pa.; Clarion Buick Co.,  
Clarion, Pa.; Kittanning Buick Co.,  
Kittanning, Pa.; F. L. Wirick, San

Pedro, Cal.; Walker Auto Supply  
Co., New Kensington, Pa.; John J.  
Schiffmacher, Brooklyn, N. Y.;  
John B. Moser, New York City;  
McCarthy Bros., Inc., Philadel-  
phia, Pa.



## Easy to Stop the End-Thrust in Ford Crank-Shaft

Don't throw away the end bearing cap. Don't go  
to all the trouble of putting on a new one, with  
all the necessary scraping to fit. Simply use an  
Oestern SHIM. The old cap will fit fine and do  
service equal to new one.

A full end thrust bearing next the fly wheel made  
positive.

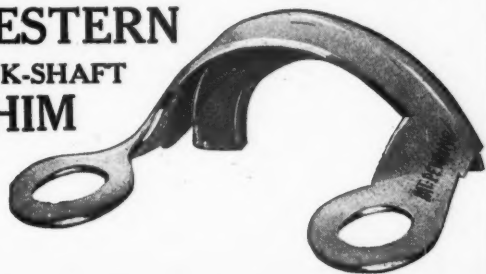
75c for one. \$8.40 per doz., list. Liberal discount  
to jobbers and dealers. If your jobber does not  
handle them send your order direct to us.

THE OESTERN CO.

DUBUQUE,

IOWA

The OESTERN  
CRANK-SHAFT  
SHIM



## Increase the EARNING capacity of your garage

by using DICKERSON Turntable and Service Jacks.  
Cars moved instantly—easily. Spring replacements  
and chassis repairs made in much less time—raises  
car frame by any fraction of an inch, making bolt  
holes line up perfectly. Works where no other jack  
will—does work impossible with others. Mechanism  
like heavy truck drive. Handles all cars—bumpers,  
trunk racks, etc., do not interfere. One man easily  
raises heavy truck.

Write for catalog. Some valuable territory open for  
"live jobbers."

C. A. Dickerson Compressor Corp.

220-222 Chicago St., Buffalo, N. Y.

DICKERSON  
GARAGE JACKS  
AIR COMPRESSORS  
SHOP EQUIPMENT



Turntable Jack No. 11.

## \$2 Profit for 30 minutes time with the Safety Center Reamer!

Easy to  
Operate



**Garagemen Make  
Big Profits Easy  
Reclaiming Front  
Ford Axles!**

The news sensation among  
garagemen! A big **quick** profit-  
maker! Reclaim front axles with  
this **Safety Center Reamer**.



Every job means a satisfied customer and  
\$2 profit for you. Any one of your help-  
ers can do the complete job in 30 minutes.  
When the front wheels "wobble", use the  
**Center Reamer** on the axle. Supply  
spindle bolts with a set of Lock Nuts and  
Washers. Makes front wheels true forever. Better  
than new axle. Profits for you—customer satisfaction.

### More Business—More Profits—Send Today!

More business and bigger profits for you. Makes more  
money on your helper's labor. Less than four repair jobs  
pays for complete set. Don't delay. Be the first in your  
community. **Center Reamer** complete with nuts and  
washers to equip six cars sent prepaid for only \$7.50. Extra  
washers and nuts at low price. Send today.

**Safety Manufacturing Co.**  
1812-14 Walnut St. Kansas City, Mo.

## Four Wheel Brakes are no better than two—

if they are lined with a poor brake lin-  
ing. Of all things on a car there's none  
so important as good brakes and  
motorists know it. They want de-  
pendable brakes—give them this safety  
with

## TESTBESTOS

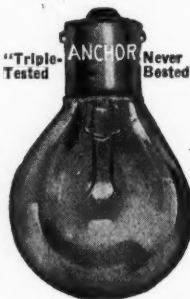
### Automobile Brake Lining

TesTbesTos takes an unflinching grip the  
minute the brake is applied. Made  
from extra long asbestos fibres, inter-  
woven in strong brass mesh and well  
treated. Tested and guaranteed.

Ask us for the name of the  
nearest TesTbesTos Jobber

**American Asbestos Co.**  
Norristown, Pa.

"Triple-Tested  
ANCHOR Never  
Bested"



## "OH HIM?—HE'S THE OLD MAN'S NEPHEW!" NEPOTISM

It is an inflexible rule of the makers of  
Anchor Auto Bulbs, applicable from the  
president down, to employ only one mem-  
ber of any family.

Thus we eliminate favoritism being shown  
to one's incompetent relations at the ex-  
pense of jobbers, dealers and car owners.

We rid the plant of inefficient workers  
by sticking to this rule against nepotism.

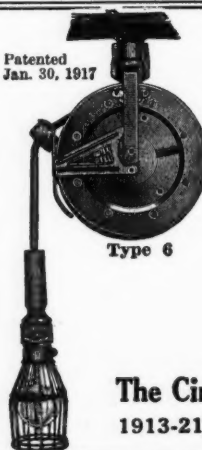
Our rigid system of counter-checking 21  
operations, unhampered by sentimental  
complications, assures you a lamp scientific-  
ally perfect and reasonable in price.

### ANCHOR AUTO BULBS

"Triple-Tested, Never-Bested"

Anchor Electric Co. 555 Jackson Blvd., Chicago, Illinois  
Originators of "Same Day Service" in the Auto Bulb Industry

Patented  
Jan. 30, 1917



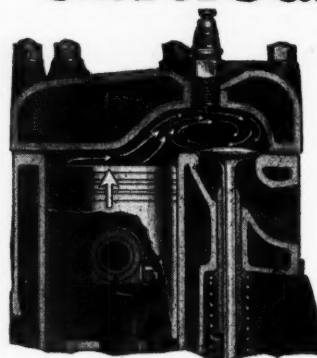
## Autex Extension Reel

Takes light where wanted. Cord locked  
at any desired point and rewound au-  
tomatically on reel when not in use.  
Used in all places where extension of  
either light or power is required, elim-  
inating the inconvenience and danger  
of loose cord extensions.

Approved by Underwriters

**The Cincinnati Specialty Mfg. Co., Inc.,**  
1913-21 Powers St., Cincinnati, Ohio

## The Ricardo Head



### Turbulence Speeds Up Combustion

Slow burning mixtures are  
speeded up at all loads and at  
all speeds.

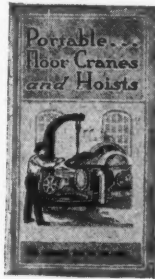
The performances and econo-  
mies that the Ricardo Head  
makes possible promises much  
for the future of high speed,  
high compression E11 Head  
engines.

### WAUKESHA

**Motor Company**  
ENGINE BUILDERS  
Waukesha, Wisconsin  
New York Detroit

**See Pages  
275, 276  
& 277**





**Lots of work  
but darn  
little profit!**

A Canton Crane will help here. It is a willing and useful helper, keeps the men at their own job and draws no salary. The lifting jobs that taxed the strength of many men are easily handled by one man with a Canton. A good mechanic likes good equipment. The efficiency of the Canton will be reflected on the whole job. And the job will be delivered on time—well done!

Canton Cranes were designed for shop use. They will perform any lifting job they are called upon to handle, are well built and will last a lifetime.

Where would a Canton Crane help you? Think this over and write for our booklet, M.A., illustrating how practical and busy the Canton is in actual use.

The Canton Foundry & Machine Co.,  
Canton, Ohio  
New York Office: 203 East 15th Street

**CANTON**  
**PORTABLE**  
**CRANE & HOIST**

**AUTO-RAY**  
SPOT LIGHT  
WITH TROUBLE LAMP FEATURES

MADE BY  
**EDELMAANN**

**The Best Spot Light Made**



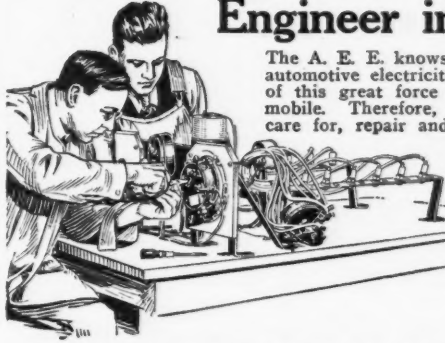
Especially attractive in appearance. Easily operated and made to last. Use it as a trouble lamp if you wish.

When you sell an AUTO-RAY Spot Light you can be assured of making a satisfied customer.

Your Jobber Can Supply You  
**Price \$4.50**  
AND WORTH IT

**E. EDELMANN & CO.**  
Manufacturers of Better Automotive Necessities  
2332 Logan Blvd. Chicago, U. S. A.

## Become an Auto-Electrical Engineer in One Year



The A. E. E. knows all there is to know about automotive electricity. They know the science of this great force as it applies to the automobile. Therefore, they know how to install, care for, repair and service all kinds of electrical apparatus for the motorcar. They work with equipment manufacturers in designing, making, installing, repairing and servicing this equipment. Some stay at factories. Others travel about as Service Supervisors, advising with distributors and dealers. Many go into business for themselves.

This is one of the highest paid branches of Electricity. Salaries of \$3,000 to \$10,000 a year are common. Fit yourself for one of these fascinating positions here at America's Greatest Electrical School.

### A New Enormous Field Needing More Trained Men

So great and fast is the increase of automobile manufacturing, trained men are needed for this important work. Manufacturers cannot depend on any other than trained men for this work, because too much money is risked. That's why they are willing and glad to pay such high salaries for the right men.

#### Or Learn in 3 Months

For those who merely want to become Automotive Electricians, a big field, with jobs always waiting. Short, intensive training by skilled instructors, lasting three months. You master starting, lighting and ignition. Very popular course—class opening all the time.

**FREE BOOK**—Write quick for Big Free Illustrated Book, telling all about this great school and the big field of opportunity it fits you to enter.

**SCHOOL OF AUTOMOTIVE ELECTRICITY INC.**

Associated with the

**SCHOOL OF ENGINEERING OF MILWAUKEE**

Dept. MA5, Milwaukee, Wis.

## What Do You Think of These Plate Features?

The mere statement that Pore-Blown Plates will give greater capacity and better service over a longer period of time would mean little to you unless you received actual proof. Because of this, we want you to consider the following facts; and then if you are interested, send a trial order.

#### Pore-Blown

These plates have a natural porosity. Our new treatment causes one of the elements in the paste to actually blow itself out of the plate, leaving thousands of small pores in its wake.

#### Pulverized Paste

The materials used are not just mixed, they are pulverized. You'll never find a lump in a Pore-Blown Plate.

#### Re-enforced Grid

These plates are strongest where the strain is greatest. That is because the grid is re-enforced at the bottom.

#### Materials

The materials that go into Pore-Blown Plates are 100 per cent lead and lead oxides. Every particle in them is a working particle.

Let us send you our price list on Pore Blown Plates and all battery parts.

**General Storage Battery Co.**  
2005 Locust St., St. Louis

**Pore-Blown Plates**



# CONNECTICUT IGNITION

## The "WHITE" Valve Grinder—\$2.00 Retail

Repairmen say it does finest work. Has no complicated parts, delivers power exactly over the center and can be controlled perfectly. Reaches valves ordinarily inaccessible. Liberal discount. Ask your jobber.

American Motor Products Corp., South Bend, Ind.



## RED GIANT RIM TOOL

The name "RED GIANT" is a guarantee of satisfaction. Known and used in the majority of the civilized world. If your jobber cannot supply you write direct.

RED GIANT TOOL CORP.  
Lynchburg, Va.

## We Make RADIATOR CORE EQUIPMENT

For the Complete Manufacture of  
RADIATOR CORES

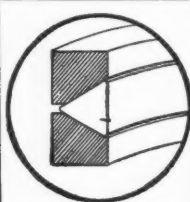
Ask Us About This Equipment

We make the best radiator test plug.

RADIATOR ENGINEERING CO.

626 Nesselwood Ave.

Toledo, Ohio



Wedge-Rite piston rings are 3-piece rings following the best engineering practice. The patented wedge takes up the wear, keeping the groove and cylinder wall tight against oil and compression leakage. Wedge-Rite Piston Rings are made from the best individual castings.

WedgeRite - - - - - Plattsburgh, N. Y.

## Good Profits for Distributors in Brunner Gauges for Fords!

More Distributors needed NOW to sell Brunner Gas and Oil Gauges for FORDS. These new gauges operate on gravity pressure. Gas Gauge is graduated steel measuring rod in nickel plated tube. Oil Gauge is Japanned tube with graduated measuring rod. Raise hood to read. Retail at \$3.00 each. Write NOW for proposition.

FEDERAL ENGINEERING CO.

746 12th St.,

Newark, N. J.

Over 100,000,000  
**TIMKEN**  
Tapered  
**ROLLER BEARINGS**  
Have Been Manufactured



The most efficient Valve Spring Compressor and Holder. Saves time and temper. Fully guaranteed. Printed matter on request. Get it! \$7.25 C. O. D.

The Little Wonder Valve Tool Co.  
606 Onelda St., Joliet, Ill. P. O. Box 1028  
Manufactured by Waterloo Valve Spring Compressor Co.



## "Best Money Maker I Ever Handled"

Says One of our Distributors

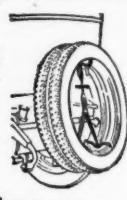
And his sales prove it! The reason is that the Duplex Tire Carrier & Rim Tool is one of the most popular items of equipment introduced in recent years.

**DUPLEX** Second Spare Tire Carrier

And Rim Tool

Two tools for the price of one. Holds tires securely. Expands and contracts rims. Attached instantly. Write for details.

TRIPP-SECORD & CO.  
606 Kerr Bldg. Detroit, Mich.



## See Pages 275, 276 & 277

## DILL INSTANT-ONS

Dust and Valve Cap

Off or On in 5 Seconds

The Dill Manufacturing Co.

Cleveland, O.



\$5

## Wood-Imes

Water Circulating Pump

For Ford Cars and Trucks

Is as reliable as the Ford Car itself and assures a positive cooling system that constantly functions. No more overheating—No more freezing in travel—Made engineeringly correct of best materials—quickly and easily installed. Write for Dealer Discounts and complete information.

WOOD-IMES MFG. CO., MINNEAPOLIS, MINN.  
Formerly Mid-West Mfg. Co.

## Motorex EQUIPMENT To Help You Sell Motorex

WRITE FOR INFORMATION ABOUT  
THE SALESMAN'S WORK BOOK

**SALES EQUIPMENT COMPANY**

409 Kerr Bldg.

Detroit, Mich.



DOUBLE YOUR FORD SELLING FIELD  
And Make Two Profits with

## Warford

AUXILIARY TRANSMISSION

Two-Ton Capacity—High Speed

Ask your nearest distributor to demonstrate it or write us.

THE WARFORD CORP., 44 Whitehall Street, New York

## REMINGTON AUXILIARY

GASOLINE RESERVE FOR FORDS

Ask Your Jobber or Write Us.

REMINGTON AUTOMOTIVE CORPORATION  
17 West 60th St. New York, N. Y.

The Man  
Who Owns  
It Never  
Runs Out  
of Gas

## Biflex Cushion Bumper

for every car



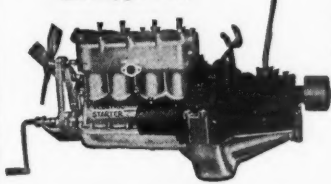
"PROTECTION  
WITH DISTINCTION"

THE BIFLEX CORPORATION, Waukegan, Ill.

## SIMPLEX replaces the regular Ford Transmission

For More POWER

26 to 1 in low in our new type "CT"



**"It will pull like everything"**

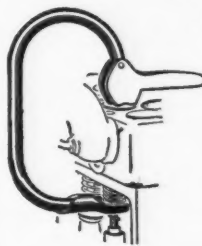
Three Speed Sliding Gear Type—  
for Ford Cars and Trucks

You have three speeds forward and one reverse, replacing the regular Ford transmission—drums, bands and all. The low speed is lower than the Ford, therefore, more power—the third is the same as the Ford and the second is half way between.

It's ruggedly built with over-size alloy steel gears. Multiple disc clutch. Foot break on jackshaft outside of case. Hyatt Roller and Genelite bearings. No cutting or machining—installation easy.

E. D. & A. F. CRONK, Inc., 140 Hotel St., Utica, N. Y.

## Eight Valves in Three Minutes— Without Pinching Your Fingers



The Beardsley Never-Slip valve lifter holds the valve down and the spring up, leaving both hands free to remove the pin. It will not slip off and bruise the fingers. It is so simple and efficient that the eight Ford valves can be removed in three minutes.

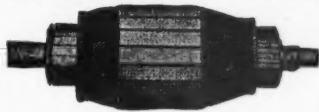
Three types are manufactured:—  
The Universal (fitting 95% of all automobile motors with removable valves) .....\$3.00 List  
Ford ..... 1.00 List  
Combined Fordson and Dodge (Fits either perfectly and is used by most every Dodge and Fordson service station throughout the country)..... 1.50 List  
Write today for the liberal discounts and full information and ask your jobber for the Beardsley Never-Slip Valve Lifter.

THE LOOMIS-BEARDSLEY CO.  
1200 South Wall, Columbus, Ohio

BEARDSLEY NEVER-SLIP VALVE LIFTER

## ARMATURE REWINDING

We Are  
Experts in  
The Business



Workmanship  
and Service  
Guaranteed

### 1000 SATISFIED CUSTOMERS

Are You One of Them? Save Money by Becoming One

Fords .....\$1.50  
Generators all other makes .....\$3.25

DO IT NOW—DON'T DELAY

Write for particulars

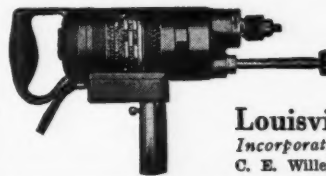
**PIONEER ARMATURE CO., Inc.**

2805 Cottage Grove Ave.

Chicago, Ill.

## Get This "Pioneer" \$65 Garage Special

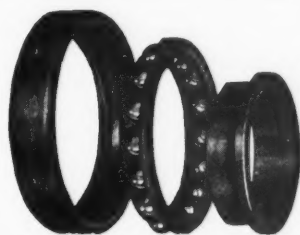
Electric Drill  
and Valve Grinder



Greatest time and money saver,  
as well as money maker, for  
your shop—

**"It Will Do The Work"**

**Louisville Electric Mfg. Co.**  
Incorporated Louisville, Ky., U. S. A.  
C. E. Willey, Pres. J. B. McFerran, Secy.-Treas.



The Bearings Company of America, Lancaster, Penna. Angular Contact Thrust Bearings. Angular Contact Radial Bearings. Manufacturers of Thrust Ball Bearings of all types. Let our Engineers help to solve your Bearing problems.

**The Bearings Company of America,**  
Lancaster, Penna.

Detroit, Mich., Office,  
1012 Ford Bldg.

## SKIVED PATCHES

Cord and Fabric

Any Size or Ply—Made from Factory  
Adjustment Tires.

**THE LEO MEYER CO.**  
AKRON, OHIO

Est. 1914

See Pages  
275, 276 & 277



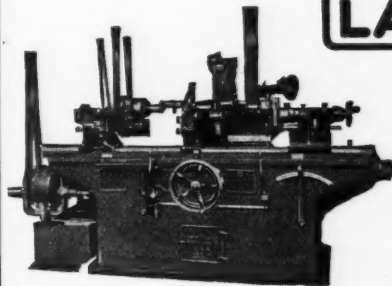
ACCURATELY  
**DALL**  
MACHINED

**REPLACEMENT  
PISTONS**

Semi-steel—for use after a rebores or re-grind job. Made to manufacturer's specifications. Made to pass motor builder's inspection. Standard sizes and oversize. Write for price list.

**THE DALL MOTOR PARTS CO.,**  
400 South Street, Vermillion, Ohio.

**LANDIS**



The LANDIS 4-A Special GARAGE Grinding Machine is built ESPECIALLY for repair shop work. You don't need a manufacturing machine—don't get one. The 4-A Special is perfect for repair shops. Quick and easy change from job to job. Simple to operate. ACCURATE. Built by world's largest makers of grinding machines. More value for your money. Catalog.

**Landis Tool Co., Waynesboro, Pa.**

New York Office—30 Church St.



"It pays to buy a Kellogg"

# KELLOGG

## COMPRESSORS

ROCHESTER, NEW YORK

**EARN Big Profits**

**MAKE \$150 TO \$300 MONTHLY**

Buy an HB 8-Hour Constant Potential Battery Charger on long easy terms, more than paid by big monthly profits. Small cash payment puts HB outfit in your shop, complete ready to connect up and operate. 30 days' free trial on money-back guarantee. Only \$20 monthly pays for your outfit. Write today for information.

**HOBART BROS. CO.,**  
Box AR 124 **TROY, OHIO**

**Cyclo "Dynamic" Hot-Spot for Fords**

This "Modified Vapor" manifold gives a gas with lots of "kick" in it for hill-climbing — exceptionally smooth running and economical at all seasons. Vacuum control varies the heating inversely with the load.

The best permanent proposition for dealers.

**CYCLO MANIFOLD CO.** **High & Chestnut, Akron, Ohio**

**Have you seen the new Gilmer Fan Belt?**

It's a V shaped belt, constructed of tough fabric and a new special rubber compound. Fits for all popular cars using V or grooved pulleys. Write for prices and complete information.

**L. H. Gilmer Co.**  
Philadelphia

*"It's a Gilmer Product—you can depend on it."—Happy Van, the Gilmer man.*

# Gilmer

**Noiseless Timing Gears**

Install quietness — Cloyes NOISELESS Timing Gears. They give the motor a soft, even "purr"—permanently.

**Cloyes Gear Works**  
1614 Collamer Ave., Cleveland, O.

Sales Representatives  
**United Autoware Co., Flak Bldg., New York City**  
N. Lowenthal, Box 952, Ft. Worth, Texas

**YOU can handle this body PROFITABLY**

# HYMAN

## PRESSED BODIES

THE HYMAN PRESSED BODY CO.,

All steel construction provides lightweight with extreme strength. Outlast chassis. One design fills most light truck user's requirements. Ton and Half-ton sizes. Shipped knocked down. Low priced. Distributor and dealer terms liberal. Write.

**Huntington, W. Va.**

**See Pages**  
**275, 276 & 277**

**INSIST UPON THE RED TAG**

**Mosler Spit Fire**

**GENUINE PLATINUM ELECTRODE POINT GUARANTEED**

**MOSLER METAL PRODUCTS CORP.**  
P. O. Box 292, Mt. Vernon, N. Y.  
Manufacture "Spit Fire" Red Top and Timers

The oldest standard plug  
Actually Spit Fire while others spark only.

**ENERGETIC IGNITION—GREATER POWER**

**WATER PUMP FOR FORDS**

**POSITIVE WATER CIRCULATION**

Keeps them cool in Summer—  
A Winter Necessity

**"CIRCULEX"**

The only pump that seals water from bearing. Pumps 12 gallons water per minute at 18 M.P.H. Price—complete with belt—\$3.90

**PRICE BROS., FREDERICK, MD.**

**BROADWAY MODEL—ALL NICKEL**

# FEDERAL BUMPERS

They look like part of the car, not like accessories. Beautiful in design.—rugged. Ask for Catalog No. 11.

**FEDERAL PRESSED STEEL CO.**  
Jobbing Division: London Guarantee & Accident Bldg., Chicago

**LONG-LIFE**

# Kokomo

## TIRES AND TUBES

**KOKOMO RUBBER CO., Kokomo, Indiana**  
131 South Main St.

Kokomo Long Life tires and tubes make money for dealers who handle them.

Kokomo Twin-Grip Fabrics  
Kokomo Two-Grip Cords  
Kokomo Everlast Red Tubes  
Kokomo Standard Gray Tubes

**Real High Tension Ignition for Ford Cars**

Varley Transformers eliminate nearly all chronic ignition trouble. Save gas. Add power. Keep plugs clean. Stop misfiring. Save repairs. \$2.50 each. Write for full particulars.

**The Autocoil Co., Jersey City, N. J.**

**ZENITH**

# CARBURETOR

**More Power Less Fuel**

**Zenith - Detroit Corporation, Detroit, Mich.**

**\$17.50 COLONIAL CYLINDER HONES \$17.50**

**PRICES REDUCED ONE HALF**

You can now buy the Colonial Cylinder Hone, an approved tool for this class of work and one of the best Hones on the market at \$17.50 each F. O. B. Kalamazoo. Made in three sizes, one, two and three, No. 1 2 3/4" to 3 3/4", No. 2 3 3/4" to 3 3/4" bore, No. 3 3 3/4" to 4 1/4".

Colonial Cylinder Hones are now being used by some of the best factory Service Stations in the country as well as by numerous Service Station Owners.

**Colonial Gear & Manufacturing Co., Kalamazoo, Mich.**

**SPEED-O**

## Multiple Valve Lifter

LIFTS 8 TO 12 VALVE SPRINGS  
IN LESS THAN 30 SECONDS

Manufactured by  
**SPEED-O MULTIPLE VALVE LIFTER CORP.**  
1926 Broadway, New York

**JOHNSON Gas Appliances**

**Metal-Melting Soldering Heat-Treating**

# JOHNSON GAS APPLIANCE CO.

**Cedar Rapids IOWA**

Pacific Coast Repr., C. B. Babcock Co., San Francisco, Calif.  
New York Office—277 Lafayette St.





### The 100% Lubricants

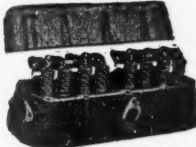
Guaranteed not to cake or harden or to contain any Moisture, Mineral or Fatty Acids. Attractive proposition for Jobbers and Dealers.

**RADIANT OIL CO., Inc.**  
Manufacturers and Compounders

Lima

Ohio

### FRONTENAC CYLINDER HEADS and FRONTY-FORDS



The remarkable showing of the Fronty-Ford in the 500-Mile Race at Indianapolis May 30 was due solely to the performance of the Frontenac Cylinder Head. This Head is adapted for use on your Ford car by its designer and builder, Arthur Chevrolet. Write for FREE Catalog. Book, "How to Build a Fronty-Ford," \$2.00; free with orders of \$50.00 or more.

**CHEVROLET BROS. MFG. CO., 410 W. 10th St., INDIANAPOLIS**

### PYROLITE STOP SIGNALS

High in Quality—Low in Price  
Get Our Plan

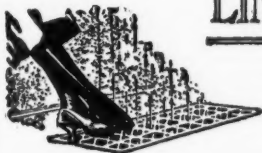
**Steinberg Products Co.**  
3146 Olive St. St. Louis, Mo.



### "2-Point-Test" \$2.50 HYDROMETER

"Guards  
Your  
Battery's  
Health"

Here at last is a battery tester of very finest quality. It is absolutely guaranteed to be accurate—every instrument must pass the two-point test. Green ribs of celluloid make sticking of float impossible. Write for details.  
**N & N HYDROMETER CO. 3715 W. Grand Ave., Chicago**



### LINENDOLL EXHAUST HEATER

Attractive in appearance, with cleaning features of removable heating coil with no connecting joints inside the heater pan to leak. Meets instant approval. No odor or noise. Easily installed and operated. Will boost your winter sales—get our attractive trade proposition.

**THE NORWALK AUTO PARTS CO.**  
Norwalk, Ohio

The new Columbia selling agreement incorporates those features interesting to successful dealers. You are invited to investigate.

**COLUMBIA MOTORS CO.**  
Address Dept. "B" Detroit, Mich.

### ALVORD QUALITY TOOLS



Taps, Dies, Cutters, Drills, Reamers  
Send for Catalog  
**ALVORD REAMER & TOOL COMPANY**  
Millersburg, Pa.

### BATTERY SERVICE EQUIPMENT!

**UNITRON Rectifier** | **PORTOSTAT Test Set**  
**FOREST ELECTRIC COMPANY**

New and Wilsey Streets NEWARK, N. J.

FOR ALL  
MAKES of  
MOTORS

**TRINDL**

QUALITY PISTON  
PINS and WARP  
PROOF VALVES

SUPER  
WARP  
PROOF  
VALVES  
(PATENTED)

Write us for name and address of jobber nearest you.

**THE TRINDL CO.**  
2917 S. Wabash Ave., Chicago, Ill.

### PORTER RED-CUT GLASS



For Ford Replacements

The finest quality hand blown triple strength crystal sheet glass cut to exact size and finished on one edge. Packed in a manner that minimizes breakage. Jobbers and dealers can carry stock with little chance of damage. Write for complete details.

**PORTER MIRROR & GLASS CO., Fort Smith, Ark.**  
Automotive Division—3124 Locust Blvd., St. Louis, Mo.

### ROME-TURNEY RADIATOR SERVICE

Honeycomb and tubular replacement cores, Radiators and parts for all cars and trucks.

One-day service. Dealers find our agency profitable.

Write for our plan

**Rome-Turney Radiator Co.**

Service Dept., - - - Rome, N.Y.

### NO-LEAK-O PISTON RINGS

Won't Leak Because They're Sealed With Oil



No-Leak-O Piston Rings are making money for dealers everywhere. Their "oilSEALing" groove—found only in No-Leak-O—picks an oil film in between piston and cylinder walls like "packing" in a pump. Oil and gas stay where they belong. National advertising is helping the dealer sell No-Leak-O.

It will pay you to stock No-Leak-O at once.

Price 35c and up

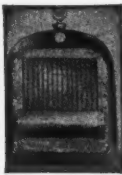
**NO-LEAK-O PISTON RING CO., Dept. 376, Muskegon, Mich.**

### Kawneer SOLID COPPER STORE FRONTS

Write for Special Book Garage Fronts

**THE KAWNEER CO., 1219 Front St., Niles, Mich.**

### TYSON



#### Radiator Cover

Fits Cars only.  
Best weather-proof  
materials. Ford  
size \$3. Average  
all other cars, \$4.  
Write for discounts.

#### Stay-Tite Tire Cover

With handy hook.  
Hooks easily. Can't  
loosen. Top mate-  
rial or enamel  
drill. As shown  
and Drum Type.



**TYSON MFG. Co., Lock Haven, Pa.**

Yes!

Outperforms any  
car in its class

# GARDNER

BUILT BY THE GARDNER MOTOR CO.—BUILDERS OF VEHICLES SINCE 1882

### TAKE THE END-PLAY OUT!



—WITHOUT PULLING THE MOTOR

THE C. A. ADJUSTABLE CENTER BEARING CAP corrects Ford crankshaft end play and sets magneto for highest efficiency without removing the motor. Easily and quickly installed. Guaranteed for one year. List price \$3.75. Ask your jobber or dealer or write us direct.

Pat'd 7-22-'22

**ADJUSTABLE BEARING CO., Inc.**  
Dept. M. Brazil, Indiana



# CASE

## MOTOR CARS

J. I. CASE T. M. COMPANY  
Racine Wisconsin



# WEL-EVER<sup>OIL CONTROL</sup> PISTON RINGS

Less Oil and Gas—from WEL-EVER equipped units. Its oil control feature is guaranteed to stop oil pumping, prevent spark plug fouling and reduce carbon formation.

Write for interesting circular on oil pumping and details about this fast selling piston ring.

**THE WELEVER PISTON RING CO.**  
1713-15 Canton St. Toledo, Ohio



# INSHIELD<sup>DRIVING LIGHTS</sup>

INSIDE THE WINDSHIELD—NO GLASS TO CUT

<b>INSHIELD 8</b> 4 1/2 in. diameter. Heavy Nickel or Black Enamel. Made of heavy sheet brass. 21 c. p. Mazda precision type tipless bulb, silver, triple-plated reflector \$7.50	<b>INSHIELD SENIOR</b> 5 1/2 in. diameter. Nickel finish only. Simplest and best inner-controlled driving light made. \$10.00
--	--

**The Inshield Products Co., Toledo, Ohio**  
Formerly the Thal & Bitter Machine Co.  
Patented Oct. 30, 1923



# Flower City Self Closing Chain Links

No tools required. One turn of wheel under weight of car closes and locks link. Repairs instantly. Price, 10 links in box, 25c.

Write for prices, samples and discounts.

**Flower City Specialty Co.**  
Rochester, N. Y.

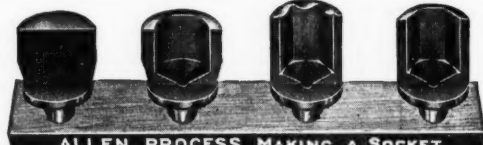
Pat. Dec. 12, 1922

Let us send you our **FREE** Catalogue on

# Huetter's

## Fly-Wheel Gear Bands

Huetter Machine & Tool Co.  
546 Kentucky Ave. Indianapolis, Ind.




Cold-Drawn Sockets

**ALLEN PROCESS MAKING A SOCKET**

**Allen Wrench Sets**

**The Allen Manufacturing Company, Hartford, Conn.**




# "Dimit"

Dims the lights with a touch of the toe. A remarkable seller. \$1.50. For all cars.

Distributors Wanted

**THE DIMIT CO.**  
317-19-21-23 Fallsway Baltimore, Md.



# GAYLORD LITTLE GIANT Water Saver


Cuts your water bills in half by stopping water waste. Screws on end of hose. Gripping the nozzle starts the flow. When nozzle is released, the water stops **AUTOMATICALLY**. Self-operating. Impossible to get out of order. Made of brass; hose nozzle of pure rubber. List price \$3.00.

**THE GAYLORD MFG. CO.** Paterson, N. J.

# Profit in Flat Rates

The Hall Cylinder Hone turns out a perfect job, cuts labor cost and keeps your customer's car from being tied up. O. K.'d and recommended by Buick engineers.

**THE HALL CYLINDER HONE CO.**  
435 Dorr St., Toledo, Ohio




# ALMOND "STRAIGHT LINE" DRILL CHUCKS

HOW IS IT DIFFERENT? The Teeth are on the Nut. The Sleeve has no Teeth. The Pinion Holes are Bushed. The Pinion does not break and IT DRIVES DIRECT (None other Does). You can recognize the ALMOND Chucks by the "STRAIGHT LINE" Milling on the Sleeve

Write for Illustrated Descriptive Bulletin

**T. R. ALMOND MFG. CO., Ashburnham, Mass., U. S. A.**



Spring-steel, Oil-tempered Bumpers in Six Complete Styles. Guaranteed Satisfactory Attaching Arms for all Leading Makes of Cars.

*We invite comparison in appearance, quality and price.*

**THE BELLEVUE MANUFACTURING CO., Bellevue, Ohio**

<b>EVERYDAY</b> PISTON RINGS	<b>EVER STEP</b> PISTON RINGS
Interlocking joint eliminates all filing, fitting and joint leakage.	A high grade step cut at a low price; lathe turned individually gauged.
Priced to be profitable to dealer and jobber.	
<b>ROYAL PISTON RING CO., INC., BATH, N. Y.</b>	

# KISSEL


The Custom Built Car

**The Aristocrats of Motordom**

7 Models—Open and Closed

Distributors in principal cities. Open territory now being closed.

**Kissel Motor Car Co.**  
Hartford, Wis.



# Hycoc

## Brake Lining

FOLDED AND STITCHED  
HYDRAULIC COMPRESSED

Millions of feet annually installed as factory equipment

**THE MANHATTAN RUBBER MFG. CO.**  
PASSAIC, N. J.

# KING QUALITY

ALL THE NAME IMPLIES


STEERING KNUCKLE BOLTS AND BUSHINGS  
PISTON PINS—PISTON PIN SET SCREWS

**Automotive Division**  
**KING SEWING MACHINE CO., BUFFALO, N. Y.**




# Battery Plates

**CONTINENTAL BATTERY CO.,**  
3201 Papin St., St. Louis, Mo.





## THE CLEARING HOUSE OF THE MOTOR INDUSTRY

FOR PARTS, ACCESSORIES, TIRES, MACHINERY REBUILDING, REPAIRING, WELDING AND USED CARS. ALSO HELP AND SITUATIONS WANTED AND MISCELLANEOUS CLASSIFIED ADVERTISING

# If you don't find what you want here, your advertisement here will find it for you

This Classified Section serves a real purpose in the industry by affording a central clearing house for all kinds of business wants. It will help you to get a position or secure competent assistants or executives; get agents or agencies, representatives or accounts. It will find a partner or financial backing. It will secure more business for you or sell your business at a fair price. It will help you to dispose of dead or slow-moving stock, sell equipment or machinery you no longer need, or it will find a new plant or factory for you. It is of special value for auction notices, the sale of books, patents, parts, industrial sites and business opportunities of all kinds. This advertising is the opportunity advertising of the industry. It is inexpensive, quick-acting, result-producing.

Have you tried it?

### PARTS and REPAIRS

#### WRITE US FIRST!

##### Save Time and Money

We carry a complete line of Automobile Parts

Transmissions (all kinds)

Cylinder Blocks Magneto (all kinds)

Drive Shafts Carburetors

New Gears (all kinds) Starters

Used Gears (all kinds) Rear Ends

400 Motors of all kinds in stock at all times

WRITE

#### BENNETT BROS.

Largest Auto Wreckers in the Country

Grant and Water Sts. Pittsburgh, Pa.

Mail Orders Given Prompt Attention

#### NEW AND USED AUTO PARTS

We have wrecked over a thousand cars.

SANDER BROS. AUTO WRECKING CO.

WEST POINT, IOWA

#### WICHITA AUTO WRECKING CO.

"The Old Reliable"

Offers you quick service, quality parts and absolute satisfaction—and our prices are a little lower. We are an old reliable house and all that implies. Our stock of parts is one of the largest in the country—from a 1907 one cyl. Reo to a 1921 Overland Four.

Wichita GIVE US YOUR NEXT ORDER Kansas

### INFORMATION

**Six cents a word** is the rate for all undisplayed advertisements set solid, regular want ad style; all capitals, 9c. a word; all capitals leaded, 12c. a word; minimum charge \$1 an insertion; payable in advance (see next paragraph).

**Ten per cent discount** if one payment is made in advance for four or more consecutive insertions. Advertisements other than "Positions Wanted" will be billed monthly if run more than four times.

**Add five words** for address if replies are to come to a box number address at any of our offices. These replies are forwarded each day as received, in new envelopes, at no extra charge.

**Refund will be made** if all insertions ordered are not needed, the amount refunded being the difference between cost of insertions given and full amount paid.

**Telephone orders** must be confirmed in writing same day. No allowances can be made for errors of any kind unless prompt notification is sent us.

**When replying** to blind ads be careful to put on your envelope the correct box number and do not enclose original letters of recommendation—send copies.

**Displayed advertisements** are sold by the inch. Rates will be furnished upon application.

**The right is reserved** to refuse any advertisement and also to rewrite and edit copy furnished whenever the publishers consider it advisable to do this.

### CLASSIFIED ADVERTISING DEPARTMENT

#### THE CLASS JOURNAL COMPANY

239 W. 39th St., New York  
5 S. Wabash Ave., Chicago

### PARTS and REPAIRS

#### PARTS FOR ALL MAKES OF CARS

Immediate service is our motto. Out of town orders shipped the same day they reach us. Full supply of all parts for all cars ever made. Complete line of new and used accessories. Satisfaction guaranteed. Send deposit with order, and specify clearly name, year and model of car. Send part if possible.

#### TRIO AUTO-PARTS & TIRE CO.

2118-2120 S. Wabash Ave. Chicago, Illinois

2012-2014 S. State St.

#### DOWMETAL PISTONS

Lighter, stronger, and longer wearing than aluminum or iron. Can be fitted with bronze bushings in the wrist pin holes same as in iron pistons. Dowmetal has no permanent growth. The expansion is little more than iron.

#### SEND FOR PARTICULARS

#### LAMBERT & MANN CO.

Cylinder and Crankshaft Grinding  
215-21 N. Wood St. CHICAGO Phone West 4918

#### AUTO PARTS

SAVE 50% TO 75% ON ALL CARS

New and Used Gears—Springs and Axles—Cylinders—Motors—Rear Systems, etc. Wire or Write

#### INDIANA AUTO PARTS CO.

316-18 NO. ILLINOIS ST., INDIANAPOLIS, IND.  
LARGEST CAR WRECKERS IN INDIANA

#### JANSEN FLY WHEEL GEAR RINGS

Chevrolet 490.....\$3.00  
Chalmers ..... 4.00

#### JANSEN MACHINE COMPANY

Des Moines, Iowa



# AUCTION

By Order of the Board of Directors, we will on

## Tuesday, Wednesday and Thursday

May 27, 28 and 29, 1924, commencing at 10:30 A. M., sell at public auction the following property belonging to the **UNIVERSAL TRACTOR PLANT**, inventory value in excess of \$1,500,000—

## located at ROCK ISLAND, ILLINOIS

Consisting of, in part as follows:

- |   |  |
|---|--|
| 3,000 tons forging billets in all standard S. A. E. numbers in $\frac{1}{2}$ to $4\frac{1}{2}$ in. round, $\frac{3}{8}$ to 1 in. up to 8 in. wide, flat, hexagon and square nickel. | 3,000 Truck and tractor hoods, fenders, running boards and steel metal parts.  |
| 500 tons cold rolled steel in flats, rounds, square, hexagon, etc.  | 2,000 Battery and tool boxes.  |
| 25 tons high speed and machine steel from all the well known makes in flats, rounds, squares and hexagons in all standard sizes.  | 5,000 Tractor and steel wheels.  |
| 2,500 lbs. copper gas line tubing.  | 1,000 Gasoline tanks.  |
| 15 tons Tobin bronze, bushing bronze, antimony, aluminum, lead, brass, rod copper tubing, etc.  | 5,000 U bolts and spring clips.  |
| 2,500 Splitdorf and Dixie magnetos.   | 5,000 Straight and S formed wrenches.  |
| 2,500 Holly, Ensign and Tillotson carburetors.  | 1,000 Brace wheel wrenches.  |
| 1,500 Remy lighting outfits.  | 25,000 Fibre, steel and cast engine differential, transmission, propeller and axle gears.  |
| 1,000 Remy impulse starters.  | 10,000 $3\frac{1}{4} \times 3/16$ piston rings.  |
| 1,000 Dixie and Bryant & Stratton switches.   | 1,000 Gasoline air cleaners.   |
| 1,000 Delco starters and generators.  | An enormous stock of parts, such as brake band lining, bushings, brake bands, conduits, gasket cam and crank shafts, engine pans, bumpers, hub caps, brace irons, starting cranks, pinions, ring gears, bolster blocks, blocks, plugs, worm shafts, control arms, clevises, gear blanks, sockets, shafts, filler cups, magneto couplings, connecting rods and hundreds of items too numerous to mention. |
| 500 Delco distributors.   | \$50,000 worth of nuts, bolts, rivets, machine screws, lock washers, set screws and other standard hardware.   |
| 250 Kellogg pumps, complete.  | 400 HEADS IRONWORKING MACHINERY such as lathes, screw machines, milling machines, boring mills, planers, radial drills, drills, hole hogs, drill presses, grinders, hobbors and shapers.   |
| 500 E. A. hand operated horns.  | 115 Arbor presses, steam hammers, punch presses, bulldozers, forges, furnaces, etc.  |
| 200 Van Sicklen truck speedometers.   | 150 Saws, broaches, pipe threaders, oil separators, balancing machines, tinnors and woodworking machinery.   |
| 1,000 Tractor and truck heavy duty jacks.   | 15 Fumixers, paint and dipping tanks.  |
| 1,000 pr. tail, side and head lamps.  | 2 Electric cranes.   |
| 1,000 Borg & Beck clutches.   | 15 Fans, blowers, pumps and compressors.   |
| 7,500 Frost complete differentials.   | 20 Tanks and pump outfits.   |
| 2,000 Oil gauges.   | 200 Motors from 1 to 75 horsepower, all A. C., 3 phase, 60 cycle, 440 volt.  |
| 7,500 Gasoline sight gauges.  | \$100,000 worth of Shop and Precision Tools.   |
| 4,000 Standard mufflers.  | A complete foundry.  |
| 10,000 Firestone rims and lugs.   | Immense lots of shop and office equipment of all kinds.  |
| 50,000 Hyatt, New Departure, S. R. B. and Timken bearings, all standard numbers.  | Detailed descriptive booklet of this sale can be obtained at offices of undersigned auctioneers.   |
| 25,000 Metal and bronze engine bearings.  | The entire plant will be sold in lots to the highest bidder for cash. A deposit of 25 per cent will be required from each purchaser. Checks in order to be accepted must be certified.   |
| 10,000 Steel oilers and grease cups.  |  |
| 25,000 Standard brass fittings, such as l's, t's, couplings, unions, battery connections, pet cocks, solderless nipples, draw cocks, etc.   |  |
| 5,000 Hose clamps.  |  |
| 2,500 4-cylinder tractor and truck motors.  |  |
| 250 Torbensen model A internal drive truck axles.   |  |
| 250 Columbia front axle.  |  |
| 500 Arvac propeller shafts.   |  |
| 3,000 Mather truck front and rear springs.  |  |
| 1,000 Motor Wheel Co. and Wayne 34x5 truck wheels.  |  |
| 1,500 Firestone 34x5 rims.  |  |
| 100 Truck transmission.   |  |
| 1,000 Channel truck frames.   |  |
| 250 Ross steering gears.  |  |
| 2,000 Truck and tractor radiators.  |  |
| 500 Truck seats and cushions.   |  |
| 350 Engine fans.  |  |
| 3,000 Leather and fabric engine belts.  |  |

Exhibition starting May 20th

**SAMUEL L. WINTERNITZ & CO. and MICHAEL TAUBER & CO.**  
AUCTIONEERS

407 First National Bank Bldg.

317 South Market St., Chicago

## PARTS and REPAIRS

**SPECIAL CLEARANCE NEW TRUCK PARTS**

An excellent opportunity for Truck Dealers to save money on standard trademarked products. All brand new and guaranteed to be in perfect condition.

3½-5 ton Ross Steering Gear, type BM, complete—less steering wheel and controls.....	\$18.00
2-2½ ton Ross Steering Gear, type BL, complete—less steering wheel and controls.....	\$10.00
3½-5 ton Blood Universal Joint Assembly complete with joints, shaft and slip-joint 42 or 67 in. Each.....	\$12.50
Remy Generators, type 935-A Tandem drive-foot mounting fits Continental and other standard truck motors. Each.....	\$12.50
Bijur Generator, type L61, for Nash trucks and Jeffrey Four.....	\$9.00
Mosler Vesuvius Spark Plugs—½ in. for Fords—¾ standard, ¾ long—with small hex for Buick, Nash, etc. Per 100.....	\$25.00
National Oil Gauge 0-50. Each.....	\$0.50
Hartman Starter Switch. Each.....	\$0.75

**GENERAL SALES COMPANY**

1919 South Michigan Ave., Chicago, Ill.

Phone—Calumet 4406

## PARTS and REPAIRS

**AUTO PARTS**

NEW AND USED GEARS, AXLES, BEARINGS, SPRINGS, MAGNETOS, GENERATORS, ETC. JOBBERS IN BANKRUPT AUTO SUPPLIES.

**BRIGHTMAN AUTO EXCHANGE**

321 Windsor Ave.

HARTFORD, CONN.

ANY PART  
for  
ANY CAR  
NEW  
or  
USED

Send for Catalogue  
Cincinnati Auto Parts  
& Wrecking Co.  
712-714 Walnut St.  
CINCINNATI, OHIO  
Parts our middle name

Garage and repair men. Why pay factory price for replacement parts when we can give you 20-60% discount on standard parts? Write for latest parts list. Economy Car Parts Co., 331-337 Main St., Bowling Green, Ky.

No. 60 HEALD CYLINDER GRINDERS at a bargain. Rebuilt and fully 90% new. You can save their cost in a short time. Write for photo and full particulars. Lucas & Son, Inc., Bridgeport, Conn.

FOR SALE—CONSTANT POTENTIAL—Hobart Bros. 200 ampere 7½ volts for 110 or 220 single phase 60 cycle current; used less than six months. \$275.00. Auto Electric Service Station, Lincoln, Illinois.

**SPECIAL RACING PARTS**

Special camshafts and special counterbalanced crankshafts for racing cars. Write for price list of other special parts. J. E. Gallivan, Rantoul, Illinois.

**PARTS FOR AUTOS AND TRUCKS**

WHAT DO YOU NEED? We have it. Gray's Auto Parts Company, 3212 Brighton Road, Pittsburgh, Pa.

## PATENTS and PATENT ATTORNEYS

Attorney-at-Law and Solicitor of Patents  
C. L. PARKER

Formerly Member Examining Corps., United States Patent Office

American and foreign Patents secured. Searches made to determine patentability and validity. Patent suits conducted. Pamphlet of instruction sent upon request. McGill Building, WASHINGTON, D. C.

**PATENTS**

BOOKLET FREE PROMPTNESS ASSURED HIGHEST REFERENCES BEST RESULTS

Send drawing or model for examination and report as to patentability  
WATSON E. COLEMAN, Patent Lawyer  
644 G Street, N. W., Washington, D. C.

## MISCELLANEOUS

**IMPROVE**

Your business standing and prestige by using Quality

**LITHOGRAPHED STATIONERY**

Our special combination plan of operation makes it possible for us to furnish you fine Lithographed Stationery produced on a White 20 lb. Watermarked Bond in quantities as low as 2000 and up.

**AT LESS THAN PRINTING PRICES****ENGRAVED HEADING FREE**

Made up in anyone of the many beautiful and original designs we feature.

You must see our samples to appreciate what we are offering you.

Send for Samples and Full List of Prices

Just a few of our prices on 8½x11 letterheads or 6½ envelopes for comparison.

4M	12M	60M	100M
\$5.95	\$3.50	\$2.25	\$2.10
per M	per M	per M	per M

Your Repeat Order Will Cost You Less

PERLESS LITHOGRAPHING CO.

1821-23 Erieau Ave. Chicago, Ill.

## PARTS and REPAIRS

VALVES, PINS, BOLTS, BUSHINGS, SHAFTS, RINGS, BEARINGS, GASKETS, BELTS, SPRINGS, ALL MOTORS AND CARS. NO SECOND-HAND PARTS. ALL NEW, STANDARD MAKE. EVANS-LAWRIE COMPANY, 782 COMMONWEALTH AVE., BOSTON, MASS.

## MISCELLANEOUS

**FOR SALE**

Interest in a Ford Agency in a town of 34,000 population. Reason for selling is the rapid expansion of business, and owner does not care to borrow the money from the Banks.

Profits past year were over 20% of Capital Stock. For full particulars, write Box 6137, care Motor Age, 5 S. Wabash Ave., Chicago, Ill.

**Crane for Garage Work**

2—Number 4 Canton Cranes, total height 8 ft. 6 in., lift 7 ft. 4 in., overhang 3 ft., weight 1150 lbs., capacity 5000 lbs. These are real bargains at \$100 each. Write or wire in your order.

The Fuerst-Friedman Co.  
Cleveland, Ohio

FOR SALE—Controlling interest in established and going automobile merchandising business, doing large and profitable volume; large territory highly developed, located in one of the best Southern States, where big opportunities exist; this is an unusual opportunity, but do not answer unless you have the money (\$25,000 to \$50,000) and business capacity. Address Box 6136, care Motor Age, 5 S. Wabash Ave., Chicago, Ill.

FOR SALE—Fully equipped Automotive Electric Station with ten Nationally known Electrical equipment lines, battery, etc., and jobbing discounts in Texas city of 20,000 with oil well and natural gas production activity. Health. Address: Box 6142, care Motor Age, 5 So. Wabash Ave., Chicago.

FOR SALE—Patents and dies for auto tire accessory. Business going good. George Broughton, 122 Wellington St. West, Toronto, Ont.

# Every Day—Every Hour Some One—Some Where

has a business want that could be satisfied quickly by someone else in the industry. Tell your troubles to the Classified Department and watch for the quick results.

6c a word for all kinds of undisplayed ads.





**New Junior Assortment Cotter Pins**

The only practical and profitable arrangement for quick, counter sales of Cotter Pins—and the best Cotter Pin Assortment for Garages and Repair Shops. The cases are very durable and covered with black leatherette, neatly marked—both lids strongly reinforced where hinged. When closed Cotters cannot be shaken out of their compartments.

We manufacture all sizes of Cotter Pins, Regular Assortments in screw top boxes and special assortments as specified.

ORDER FROM YOUR JOBBER

**WESTERN WIRE PRODUCTS COMPANY**  
ST. LOUIS, MO.

# ONE DROP OF OIL MAY RUIN A SPARK PLUG!

Where there is excessive lubrication, a drop of relatively cold oil may be thrown on the heated end of the insulator. If it's an ordinary insulator, it will likely break or chip.

But, if it's the "775" insulator, it will carry on as if nothing had happened. "775's" are built to withstand such abuse. That's why they give far superior service. When you buy spark plugs look for "775" on the insulator.

**"775"**

**Frenchtown Porcelain Co.**

Trenton

New Jersey

"Established in 1910—  
Busy Ever Since"

**STANDS THE TEST**

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The Advertisers' Index is published as a convenience and not as a part of the advertising contract. Every care will be taken to index correctly. No allowance will be made for errors or failure to insert.

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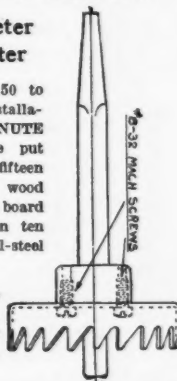
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The LUX CLOCK MANUFACTURING CO., INC.  
Waterbury - Connecticut - U.S.A.

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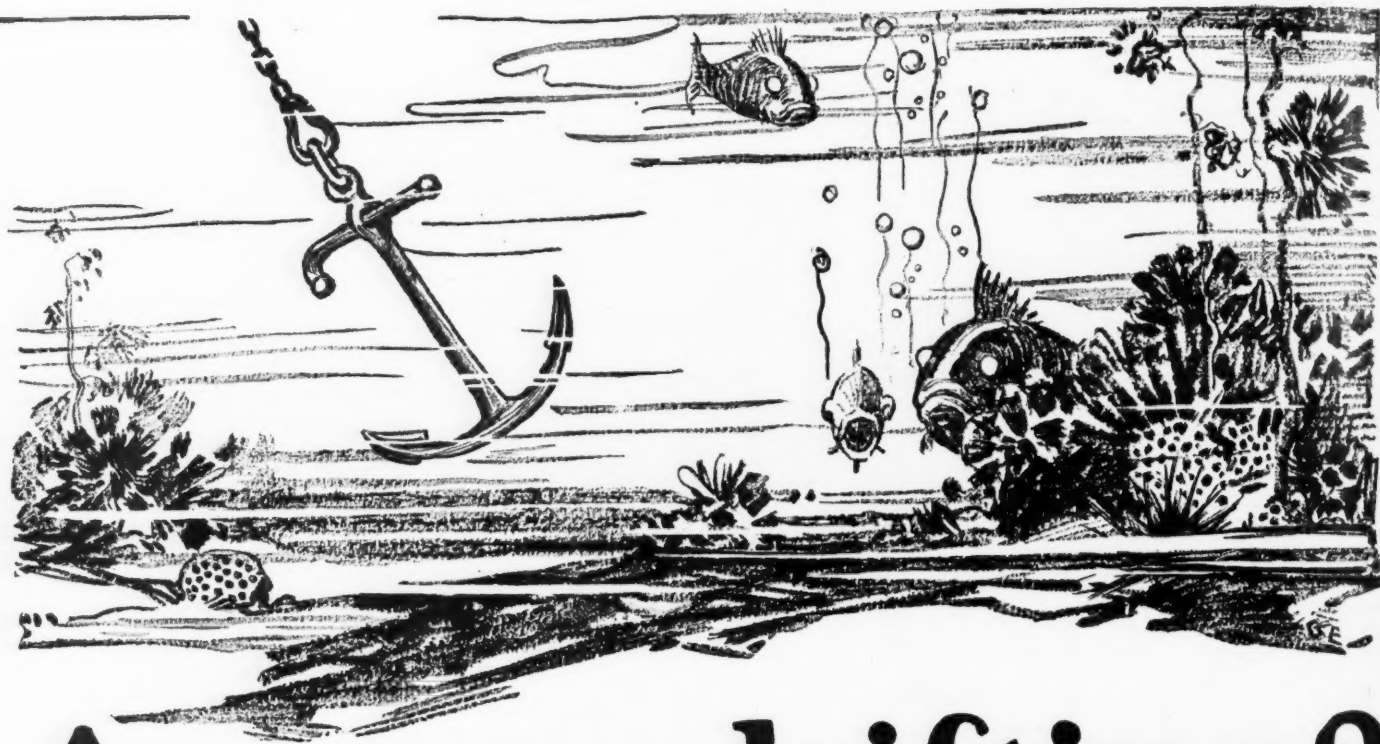
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the Genuine

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STUTZ MOTOR CAR COMPANY of AMERICA, Inc., Indianapolis, Indiana

Builders of the Original and Genuine Stutz Motor Cars



# BLACK & DECKER ELECTRIC VALVE GRINDER

*"With the Pistol Grip and Trigger Switch"*

Price **\$34**  
IN CANADA \$44

Operates on both Alternating  
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Merely specify whether for  
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Same rugged construction as the well known BLACK & DECKER PORTABLE ELECTRIC DRILLS, is air cooled and can be operated continuously without overheating.

Spindle OSCILLATES back and forth with a long steady sweep. Same motion as is used in grinding by hand but performs the work faster and with less exertion.

Black & Decker Electric Valve Grinders have been on the market since 1919, and this new Black & Decker Electric Valve Grinder as the result of five years development, is highly perfected as to correct speed of operation, power, cooling and balance, insuring fast work with minimum effort, and exceptionally long life. Among other things we have discovered the importance of absence of vibration, having discovered that vibration is frequently the cause of inaccurate work. Motor, fan, and all other moving parts are so carefully balanced that you will be surprised at the absence of vibration.

Your own jobber now has these new models in stock and is prepared to supply them without delay.

Write for new Black & Decker Miniature  
Catalogue of Electric Tools.



**THE BLACK & DECKER MFG. CO.**  
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Branch Offices with Service Stations located in the following cities

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NEW YORK  
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COMRADE ROADSTER  
2-3 passengers

**The Appeal that is Deeper than Beauty**

It is easy to analyze the preference  
American woman continues

to drive anywhere at any time with  
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She knows she cannot clash gears.  
She knows she will never suffer the  
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